

Clean Coal Technology: Environmental Solution or Greenwashing?

A thesis presented to
the faculty of
the College of Arts and Sciences of Ohio University

In partial fulfillment
of the requirements for the degree
Master of Science

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August 2009

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This thesis titled
Clean Coal Technology: Environmental Solution or Greenwashing?

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ABSTRACT

Winston, Laurie E., M.S., August 2009, Environmental Studies

Clean Coal Technology: Environmental Solution or Greenwashing? (120 pp.)

Director of Thesis: Stephen J. Scanlan

The same people most negatively affected by environmental injustices are also most vulnerable to deceptive environmental advertising, or greenwashing. Accordingly, the false marketing of corporate environmental responsibility is closely tied to the perpetuation of environmental inequity. Societal concern about environmental issues is increasing, leading to heightened interest in the implementation of clean coal technologies for power generation, a notoriously dirty industry. This research questions whether the marketing of clean coal technologies as an environmental solution to the problems associated with the use of coal is a form of greenwashing because it fails to account for and will not change the environmental and social destruction that result from the extraction process. Appalachian coal and electric company marketing campaigns and corporate reports describing the benefits of clean coal technology were collected and analyzed. This material was contrasted with the companies' environmental records, public statements, and responses from residents, environmental organizations, and social activists. Based on the analysis, results indicate clean coal technologies will not solve all of the problems caused by coal extraction and energy production, making their promotion as clean deceptive.

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ACKNOWLEDGMENTS

I would like to thank a few people for their invaluable advice, encouragement, and assistance with this project. Dr. Scanlan, you have been my advisor, professor, and employer during my time at Ohio University and I couldn't have asked for anything more. You were so nice and encouraging from the first time I contacted you and you have helped me immensely. You always tried to connect my research for you with my own research interests and my thesis topic was born from the greenwashing and environmental justice work I did for the assistantship. Thank you for all the help you have given me with my thesis and during my research assistantship. I have learned so much during my time at OU and I credit you for a lot of that.

I would like to thank my committee members, Geoff Buckley and Nancy Manring. Dr. Buckley, you were my professor for two classes during my first year at OU. The first class made me realize I really liked you as a professor. It also spurred my interest in Appalachian environmental issues, particularly coal. During the second class, I came up with my thesis topic, partly because of your teachings and ideas about the subject. Thanks, Dr. Buckley, I really appreciate your dedication to teaching, your way of getting students interested in your classes, and your expertise in Appalachian issues. My topic evolved after speaking with Dr. Manring and Loraine McCosker. Dr. Manring, I contacted you about serving on my committee because I thought your policy background and past research would be a useful addition. You were immediately supportive of my ideas and receptive to helping me. During a meeting with you, Loraine McCosker stopped by. Loraine, you came up with the idea to write about whether the marketing of clean coal was a form of greenwashing. It was like a light bulb went off in the room and we all agreed Loraine's idea was a winner. Thank you, Dr. Manring, for being so encouraging when I needed it and for being ready to help. Thank you, Loraine, for helping me come up with ideas and for being such a great environmental resource at OU.

I want to thank Michele Morrone for prompting my interest in environmental justice issues. Prior to coming to OU, I hadn't even heard of the concept and you spoke about the topic soon after I arrived in Athens. Thank you, Dr. Morrone, for that and for your efforts and influence on the Environmental Studies Program. I also really appreciate all the work Cheryl Hanzel does for the Environmental Studies Program. You are always available to answer questions and provide information. Thank you, Cheryl.

Last, but certainly not least, I need to thank all the environmental and social rights activists who work everyday to fight against mountaintop removal and the coal industry's false claims about clean coal. Your efforts are making a difference and will not go unnoticed.

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CHAPTER 1: INTRODUCTION

At one time it was rare for a company to publicize its environmental record; today it is a common practice, in some industries even expected or required. Businesses are beginning to realize it is impossible to ignore environmental problems when addressing social issues and that it is necessary to include environmental information in their corporate social reports and public communications. These environmental communications take many forms, including advertisements, environmental reports, and community outreach programs (Beder, 2002; Coddington, 1996; Cox, 2006; Laufer, 2003). Businesses have become more environmentally responsible in recent years, largely due to the presence of increased public scrutiny and the passage of stronger environmental regulations. Consumers can benefit from the marketing of environmental practices as long as businesses present themselves truthfully. When corporate environmentalism is exaggerated or falsified, the benefits of environmental marketing are negated and consumers become indifferent and skeptical of environmental claims (Avallone, 2006; Banerjee, Gulas & Iyer, 1995; Benz, 2000; Francis et al., 2007; Hartman, Ottoman & Stafford, 2006; Kilbourne, 1995; Pezzulo, 2003; Polonsky, 1994; Polonsky et al., 1998; Rathe, 1992). Deceptive environmental advertising results in consumer distrust, inability to make responsible personal decisions about environmental matters, and disproportionate societal levels of environmental risks, also known as environmental injustice.

Overview

As corporate environmental responsibility becomes more important to the public, business efforts to appear environmentally conscientious steadily increase. However, many corporations take advantage of the favorable public response that accompanies a green image by falsely promoting their environmental stewardship on one front while taking environmentally irresponsible actions and actively opposing legislation and efforts designed to protect the environment on another. This is called greenwashing, which *Terrachoice*, an environmental marketing firm, defines as “the act of misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service” (2007).

One such industry that goes to great lengths to promote an environmentally responsible image is the coal industry. Clean coal technology, for example, is currently a catchphrase used to describe new techniques coal-fired power plants employ in their efforts to clean up both the manufacturing process and the image of coal as an energy source. Clean coal technologies have been in place since the 1970 Clean Air Act Amendments limited sulfur dioxide (SO₂) and

nitrogen oxide (NO_x) emissions, but the use of advanced, modern technologies has recently gained prominence. Furthermore, the recent, extensive use of advertising corresponds with growth in the industry's public relations divisions.

Coal has traditionally been recognized as a dirty fuel, leading to global interest in environmental matters, which create numerous regulatory and public relations issues for the coal industry and its corresponding satellite industries. These increased regulations and ensuing negative publicity have motivated them to develop both a cleaner burning process and a powerful arsenal of tools to market clean coal. However, in their haste to restore the industry's image, corporate advertisers have failed to illustrate exactly what defines the parameters of "clean" and prove that clean coal is more than a cleverly disguised marketing campaign. A growing body of resistance to the idea that clean coal is substantially better than its dirty predecessor has been attracting vocal opponents of the technology and its extensive marketing campaign (National Resource Defense Council, 2008). Among such critics are those who reject clean coal technologies because of the blatant disregard for the environmental and social impacts of the extraction process, regardless of how "cleanly" it may be burned. Clean coal critics argue that the coal industry is greenwashing the public into believing that clean coal technologies are a viable way to clean up an inherently dirty process.

The environmental impacts and problems associated with the extraction and burning of coal are an important environmental justice issue. Both a field of study and a movement, the concept of environmental justice describes issues pertaining to environmental inequity, which occurs when people with little political and economic power are forced to disproportionately bear environmental risks from which others derive benefit. People of color and low-income populations are generally those who experience environmental injustices, but others are also affected by the problem (Bullard, 1998; Krieg, 1998b; Sicotte, 2008). In the case of the coal production process, the rural poor are those most negatively affected by environmental injustices. Because of their dependency on the industry and their socioeconomic status, these are also the same people who are most vulnerable to the coal and electric companies' deceptive environmental advertising campaigns, creating a strong link between greenwashing and environmental inequity.

Statement of the Problem

The use of coal causes numerous problems. The extraction of coal from the ground has long been recognized as a danger for miners. Although working conditions at mine facilities have

improved over the years, the communities surrounding mine sites and power plants suffer from serious environmental degradation and economic depression. More insidious negative effects impact the rest of the population. This will continue despite the implementation of new clean coal technologies. The most environmentally destructive form of coal extraction is mountaintop removal, which occurs in the central Appalachian region and involves the removal of mountain peaks in order to access the deep coal seams below. Mountaintop removal leads to significant water and air pollution problems, loss of topsoil and biodiversity, as well as a host of other economic, social, and environmental issues. Clean coal technology promoters do not address these problems and their advertisements frame the concept of clean coal technology as a solution without providing sufficient information for consumers to make responsible, educated decisions. Their definition of clean coal is deliberately vague and incomplete, meaning that very few people actually understand what current technologies entail. Because people do not know exactly what clean coal is, it is easier for them to believe it is the answer to all of our energy concerns, allowing the coal industry and its supporters to benefit from the exploitation of the ambiguities of clean coal.

Research Purpose and Questions

The purpose of this research is to contrast the marketing of clean coal technology with the environmental justice issues of coal extraction in Appalachia that a cleaner burning process will not change. This study analyzes and explores the greenwashing connections that result from positioning the use of clean coal technologies as an environmental solution to the problems associated with our dependence on coal as an energy source. The following question is addressed:

Q1: Is “clean coal” possible or is the promotion and marketing of such technologies a form of greenwashing with environmental justice consequences for rural communities?

Research Significance

This paper will expose the weaknesses of clean coal technology in relation to the negative impacts that clean coal technology cannot alleviate. What is missing and needed in the body of work on this subject is a comprehensive analysis of the environmental marketing and advertising techniques used by the coal industry and its assorted stakeholders in the promotion of clean coal technology, as well as how these marketing efforts complement or detract from the coal industry’s stance on environmental stewardship. The environmental justice issues surrounding

the coal extraction process have been neglected in the clean coal debate. This research will fill these gaps. Since there are currently no federal regulations on the environmental marketing of goods and services in the United States, there is great potential for consumers to be misled or confused by corporate claims of environmental responsibility. By analyzing the promotion of clean coal technology as a solution to the environmental problems associated with coal and comparing the marketing techniques with the coal industry's actions, this research will contribute to our current knowledge about environmental justice issues, particularly those that affect the rural poor. It will also enhance the body of knowledge about environmental marketing and advertising, which will facilitate responsible environmental decisions.

There is a substantial amount of literature on environmental marketing/advertising and greenwashing that provides a foundation for examining emergent debates on the marketing of clean coal technology. Much of this literature focuses on product decisions over which consumers have a great deal of choice, such as paper products or personal care items. Since most consumers cannot choose which companies provide their electricity or heat, the environmental marketing of coal faces different challenges and considerations. This research addresses the concept of low-choice consumer decisions and adds to the current literature on the subject.

Summary of the Study

Chapter Two begins with a review of the research that has already been done in the fields of environmental advertising, marketing, and greenwashing. It continues with the environmental justice literature. These topics directly pertain to this research because of the manner in which clean coal technologies are marketed as well as the environmental justice issues that result from the burning and extraction process. By examining what others have done in these fields and the work that led to the creation of this study, it becomes clear where this research fits in.

Chapter Three consists of an overview of the specifics and mechanics of the different clean coal technologies. This will ensure the reader has a base level of understanding about the topic due to the technical nature of the processes.

Chapter Four contains data and methods. The data consists of industry statements, advertisements, and marketing campaigns, as well as environmental and social justice activist rebuttals and counter campaigns. Document analysis was used to interpret the data.

Chapter Five includes clean coal marketing efforts made by the coal industry and affiliates. This material is analyzed, explained, and the data's implications are discussed. The

industry marketing techniques are compared with their environmental records and contrasted with the environmental justice issues created by coal burning and extraction.

Chapter Six consists of the arguments made by the clean coal opposition, which consists of environmental and social justice organizations, mining and power plant community members, and other concerned parties. The oppositions' arguments are discussed, data and evidence analyzed, and contrasted with the claims made by clean coal supporters.

Chapter Seven is the conclusion, where arguments made by clean coal supporters and opposition are further contrasted and final arguments are made. Study limitations and future research directions are explored.

CHAPTER 2: LITERATURE REVIEW

The discussion of marketing clean coal technology as a solution to the environmental problems associated with using coal as an energy source cannot be complete without an in depth examination of the research that has already been done on deceptive environmental advertising, greenwashing, and environmental justice. This review begins with an overview and discussion of greenwashing and corporate environmental communications literature and then moves onto the extensive body of work on environmental justice issues as well as the movement in general. Because corporate greenwashing results in the continuation of environmental degradation and the poor and people of color are disproportionately affected by environmental risks, deceptive environmental communication directly contributes to environmental injustice.

Greenwashing and Corporate Environmental Communications

This section begins with several definitions of greenwashing itself as well as other related concepts. It continues with an explanation of the origins of the practice and moves on to a discussion of the varied forms of corporate environmental communications, with an emphasis on environmental marketing. There is an in depth look at agribusiness giant Monsanto's greenwashing tactics followed by an explanation of greenwashing in the academic arena. The varied forms of opposition to environmental regulations are then examined, as well as discussion of the lack of federal environmental advertising regulations. The section concludes with an examination of the challenges for the future of green marketing and advertising.

Definition of Greenwashing

Greenwashing occurs when a business or industry decides it will be easier to convince the public of their environmental stewardship through the use of public relations tactics than it would be to actually enact meaningful changes to harmful business practices. For the coal industry, greenwashing is a powerful tool used as part of a multipart effort to control debate on the clean coal issue. In their efforts to promote clean coal, greenwashing is the most accessible to the public. Greenwashing messages may be targeted at government regulators, an increasingly environmentally aware consumer base, or citizens concerned about industry-related environmental impacts on their communities. A negative term that implies corporate deceit, "greenwash" is derived from the phrase, "environmental whitewash" (Karliner, 1997, p.169). There is no single definition, but rather a variety of descriptions. Depending on the source, the

term may have slight nuances in meaning. For example, an environmental marketing firm like *Terrachoice* uses a different definition than a consumer advocacy group or environmental organization. The Six Sins of Greenwashing, as defined by *Terrachoice*, include

1. Sin of the Hidden Trade-off, committed by suggesting a product is ‘green’ based on an unreasonably narrow set of attributes without attention to other important environmental issues. Paper, for example, is not necessarily environmentally preferable just because it comes from a sustainably harvested forest. Other important environmental issues in the papermaking process, including energy, greenhouse gas emissions, and water and air pollution, may be equally or more significant.

2. Sin of No Proof, committed by an environmental claim that cannot be substantiated by easily accessible supporting information or by a reliable third-party certification. Common examples are facial or toilet tissue products that claim various percentages of post-consumer recycled content without providing any evidence.

3. Sin of Vagueness, committed by every claim that is so poorly defined or broad that its real meaning is likely to be misunderstood by the consumer. ‘All-natural’ is an example. Arsenic, uranium, mercury, and formaldehyde are all naturally occurring, and poisonous. ‘All natural’ isn’t necessarily ‘green’.

4. Sin of Irrelevance, committed by making an environmental claim that may be truthful but is unimportant or unhelpful for consumers seeking environmentally preferable products. ‘CFC-free’ is a common example, since it is a frequent claim despite the fact that CFCs are banned by law.

5. Sin of Lesser of Two Evils, committed by claims that may be true within the product category, but that risk distracting the consumer from the greater environmental impacts of the category as a whole. Organic cigarettes are an example of this category, as are fuel-efficient sport-utility vehicles.

6. Sin of Fibbing, the least frequent Sin, is committed by making environmental claims are simply false. The most common examples were products falsely claiming to be Energy Star certified or registered. (2007)

Many forms of corporate environmental communications contain one or more of the Sins, making it important to examine company claims and motives. The Six Sins are referenced again in Chapters Five and Six.

Corpwatch.org defines the concept as “the phenomenon of socially and environmentally destructive corporations attempting to preserve and expand their markets by posing as friends of the environment and leaders in the struggle to eradicate poverty” (2001; see also *Terrachoice*, 2008). This definition illustrates the social connections to environmental issues and highlights the increasing push for corporate accountability and transparency. William S. Laufer (2003) lists three forms that greenwashing can take: confusion, fronting, and posturing, all of which are

perpetuated by corporate public relations (PR) and reputation management firms. Phaedra Pezzulo (2003) takes health considerations into account when defining the term:

Greenwashing refers not only to 'greening' the appearances of products and commodity consumption, but also to the deliberate disavowal of environmental effects . . . used to identify when a person, group, or institution purports to care about environmental health (both human and nonhuman) yet does something that perpetuates the production and distribution of environmental carcinogens. (p. 346)

This definition directly pertains to the problems faced by clean coal opponents, whose claims about the destructiveness and dangers of coal extraction and mountaintop removal are not taken seriously.

Greenwashing is more complex than a simple environmental claim on a product. Greenwashing infiltrates corporations' entire business philosophies and practices. Even companies that do exhibit some environmentally responsible qualities can still be guilty of greenwashing. Sometimes producers provide false information due to error or incomplete research. Other claims may be deliberately vague or confusing to consumers. By being deliberately vague, producers can call attention to one aspect of their product that is environmentally positive without mentioning its shortcomings (Cohen, 1991). Businesses may tell half-truths by manipulating statistics or highlighting positive aspects while omitting harmful business practices (Athanasiaio, 1996; Doyle, 1992). A lack of information transparency is a common characteristic of companies that greenwash.

Without adequate information, consumers cannot make informed decisions (Carolan, 2004; Carson, 1962; Todd, 2004). Businesses and industries may contribute large sums of money to environmental organizations while they perpetuate environmental injustices. Just as environmental marketing plays a role in every aspect of corporate marketing, the same holds true for greenwashing, which can be found in various forms of corporate communications. It can take the form of print advertisements, television commercials, web page design, company mission statements, and corporate environmental reports. Corporations sponsor environmental conferences, support environmental organizations, and fund environmental programs while ignoring their own decidedly environmentally irresponsible manufacturing and distribution processes (Beder, 2002; Coddington, 1996; Cox, 2006; Doyle, 1992; Laufer, 2003). The reasons behind the use of these tactics are varied and have a relatively long history.

The Origins of Greenwashing

Many people date the first appearance of greenwashing to the aftermath of the publication of marine biologist Rachel Carson's influential book, *Silent Spring*, in 1962 (Beder, 2002). Carson exposed the environmental and health dangers of pesticides and herbicides, specifically chlorinated hydrocarbons and phosphorous-based insecticides.¹ She was met with considerable resistance from chemical companies and others who made their living off of the production and application of pesticides, including some government agencies, the U.S. Department of Agriculture (USDA) in particular. They feared negative repercussions for the chemical industry and went to great measures to discredit the book's findings, to represent themselves as environmentally responsible, and to diffuse public criticism. Carson was not the first scientist to question the safety of the pesticide/herbicide industry, but she was the first to have such a large impact on so many people. She also frightened the chemical companies, who understood they had much to lose if Carson succeeded in convincing the public to question not only how far we should go in our quest for modernity, but also humans' place and role in the manipulation of nature. Because much of the early greenwashing involved the chemical industry, a great deal of academic research on the practice focuses on it (Bruno, 1998; Doyle, 1992; Helvarg, 1996; Robbins & Sharp, 2003). Less research has been conducted on the accuracy of how the mining industry represents its environmental stewardship, making this study an important contribution to filling that gap in greenwashing literature.

Components of Corporate Environmental Communications

At least three major environmental problems relate directly to the marketing and advertising of goods and services: pollution, natural resource depletion, and energy consumption (Murphy & Lacznia, 1977). Therefore, a discussion of the marketing and advertisement of a business or industry's positive environmental attributes is an important contribution to the understanding of environmental themes. There are three major components of corporate environmental communication: *environmental/green marketing*, which includes green advertisements and green public relations; *advocacy campaigns* that influence environmental

¹ Carson condemned the careless manner in which "we have allowed these chemicals to be used with little or no advance investigation of their effect on soil, water, wildlife, and man himself" (Carson, 1962, p.13). She stressed the importance of obtaining all pertinent facts and information before a thoughtful, responsible decision can be reached. She did not advocate that the use of pesticides be terminated, but that the public should be given all the necessary information about the chemicals' effects before making the decision of whether or not to use them (Carson, 1962). At the time, since virtually no information was provided, people were essentially not given a choice at all.

legislation, agency rules, and public opinion; and *political tactics* designed to discredit or dissuade environmental critics (Cox, 2006, p.368). Greenwashing can occur in each of these components. Since every business decision affects the environment, there is a place for environmental marketing in every step of the business process, from research and development through product dispersal (Coddington, 1996). Public relations in the environmental field, often referred to as green or environmental PR, is rapidly expanding as public concern for the environment and corporate use of public relations firms both increase. Green PR includes all the efforts businesses and industries make to present themselves as environmental stewards. In the year 2000 the top twenty-five PR companies worldwide earned over \$3,600,000,000 in revenues, with U.S. firms accounting for more than two thirds of that total (Beder, 2002). The PR industry is expected to continue its growth. Many companies now spend more money on PR than they do on general product advertising, a reversal that has occurred in the past twenty years. Public relations information on corporate environmental records and philosophies make up a considerable part of the increase in PR spending (Beder, 2002).

Green Marketing

The goal of green marketing is to construct an environmental image for existing corporate products and actions that companies are already doing; it is not a substitute for environmental planning, which should be done prior to the marketing step (Beder, 2002; Coddington, 1996; Cox, 2006; Greenberg, 1991). Prior to investing in environmental PR, a business should already have a quality environmental management plan. A successful green marketing campaign will effectively demonstrate that a company's corporate goals seek to improve environmental quality, but will not prove they are meeting industry standards or following environmental regulations. Green marketing may also be used to influence or avoid further environmental regulations and legislation that may be costly or difficult for business to implement (Cox, 2006; Peattie & Crane, 2005).

One of the earliest appearances of environmental marketing occurred in the late 1800s when United States catalogs placed their products in natural scenes in what may have been an unconscious attempt to create environmental linkages through product placement. The process of using natural imagery in advertisements continued into the 1900s and still remains a popular theme (Capek, 2008; Karna, Heikki, Virpi & Hansen, 2001; McKenna, Roche & Le Heron, 1999; Opel, 1999). In a multi-decade study of newspaper and magazine advertisements, Michael Howlett and Rebecca Ragon (1992) found that environmental linkages corresponded with current

environmental themes and problems over the years. As the salience of environmental issues shifted, advertisements followed suit. Other studies have found evidence of this trend's longevity in advertisements today (Banerjee, Gulas & Easwar, 1995; Benz, 2000; Iyer & Banarjee, 1993; Karna, Heikki, Virpi & Hansen, 2001; McKenna, Roche, & Le Heron, 1999; Opel, 1999).

Monsanto: A Greenwashing and Public Relations Snapshot

Following World War II, the United States underwent a period of intense economic growth. Agricultural advances, including the growing use of chemical pesticides and herbicides, were instrumental in this growth. In 1944 the 2-4 D herbicide was introduced, followed by DDT, an insecticide, in 1945 (Harrington, 1996). DDT was used during WWII to kill lice and mosquitoes. Chemical companies made comparisons between “human enemies” and “insect enemies” (Russell, 1996, p.1506). These advertisements showed illustrations of man-insect hybrids and extolled the use of insecticides as an antidote to the “insect enemies.” Many Americans supported these new chemicals and appreciated their assistance in the war (Russell, 1996, p. 1506). However, soon after the introduction of chemical herbicides and insecticides, the industry faced opposition and criticism from environmentalists and certain scientists. Carson's *Silent Spring* (1962) led to even greater opposition and a real need for the agri-chemical industry to take action against what they perceived as unfounded criticism.

Many environmental activists attribute chemical and agribusiness giant Monsanto with one of the most successful greenwashing campaigns in the world. Monsanto provides a powerful example because of the extreme measures the company has taken to manipulate their environmental image. Much research has been done on the company's environmental advertising and greenwashing tactics (Bruno, 1998; Helvarg, 1996; Hummels & Timmer, 2004; Patel, Torres, & Rosset, 2005; Pelaez & Sbicca, 2003; Scott, 2001). They have taken advantage of the United States' lack of environmental regulations and manipulated public opinion to suit their business goals for decades. According to Patel, Torres, and Rosset, “In an environment of lax regulation, Monsanto's discursive maneuvers help to justify their control, to make us feel good about it, and to accept it willingly” (2005, p.435). Two years after the publication of *Silent Spring*, Monsanto Chemical Company dropped part of its name and became simply Monsanto, but their business practices did not change and they continued their production of numerous toxic chemicals. Throughout the 1970s, during which the majority of U.S. environmental laws were passed, Monsanto defended its environmental stance with the company slogan, “Without chemicals, life itself would be impossible” (Patel, Torres & Rosset, 2005, p.431). This technique attempted to

avert public concern about the company's chemical use based on the argument that there simply was no alternative, that chemicals are essential and necessary, a natural part of life. Monsanto continued its PR battle with the public and the press throughout the 1970s and 1980s. As environmental pressures continued to grow, Monsanto's greenwashing efforts intensified. They worked to stall the implementation of environmental regulations by promoting their "green" image. To do this, they actively supported relatively benign environmental causes like Earth Day, while hiring PR firms to aggressively monitor environmental movements so they could align their image with popular opinion (Patel, Torres and Rosset, 2005). The company made a huge effort to gain public support in an effort to prevent potentially costly criticism.

Monsanto continues its deceptive greenwash today. Now a major producer of genetically modified seeds and a proponent of GM food, Monsanto goes to extreme lengths to convince worldwide markets of its products' efficacy and its corporate environmental stance (Bruno, 1998). The company continues to sustain its argument that human intervention is necessary for the sake of nature. A particularly emphatic argument they use is that without biotechnology and other technological advances in agri-business, we will be forced to destroy more rainforests and cultivate more land, which will still be less efficient than biotechnology. While much of Monsanto's PR strategy has remained constant, they have also responded to criticisms and cultural changes that have influenced their PR efforts. In the past, they relied on experts to convey their messages, but more recently have come to the conclusion that local farmers are perceived as being more reputable and believable, so they now use them in their PR materials (Patel, Torres and Rosset, 2005).

Greenwashing in Education

Greenwashing also influences public policy through the educational system (Beder, 2002; Fox, 1997; Nakajima, 2001). Corporations start young. The advertising and marketing industries know that children and teenagers have huge effects on the purchasing decisions of their families. One of the ways greenwashing targets young people is through the use of corporate-sponsored educational programs that are often nothing more than thinly disguised company propaganda. This is particularly disturbing as children are even less equipped than adults to recognize corporate manipulation. The American Nuclear Society tells children, "Anything we produce results in 'leftovers' that are either recycled or disposed of-whether we're making electricity from coal or nuclear, or making scrambled eggs!" (Beder, 2002, p.169). The Beef Industry Council designed a curriculum called *Caretakers All*, which aimed to counter both a decline in beef

consumption as well as environmentalists' claims about overgrazing and pollution from fertilizer runoff. The program won awards from the National Agri-Marketing Association, but was condemned by the U.S. Consumers Union as being “pure one-sided image-building for farmers and ranchers disguised as a public relations tool for the beef industry” (Beder, 2002, p.169). The same types of programs are designed, promoted, and distributed by countless other industries.

The coal, chemical, petroleum, and plastic industries generally focus their educational programs on the sciences. In one of its programs, Exxon explains to children that fossil fuels are environmentally friendly and our only option for energy. The chemical industry has made a tremendous effort in the educational arena of green PR, targeting the sciences, non-sciences, educators, and universities in an attempt to transform negative public opinion about the chemical industry (Beder, 2002). When businesses and industry groups sponsor educational programs, they not only spread their messages to a large, influential group of future consumers, but they also actively increase brand recognition of their products and services.

Several consumer and children advocacy groups have investigated corporate-sponsored educational programs (Beder, 2002; Nakajima, 2001). Their findings expose the blatant corporate influence in the educational system. In a study of 111 sets of corporate educational materials provided by corporations, the U.S. Consumers Union reported that around 80 percent contained “biased, self-serving and promotional information” (Beder, 2002, p.171). They expressed fear of a serious threat to the U.S. education system. In a related, yet different approach, the People for the American Way note some disturbing trends in their annual study on banned books in schools. They discovered that the use of a high school textbook called *Environmental Science: Ecology and Human Impact* was prohibited in one school due to complaints by a local Monsanto employee that the book was anti-industry. In another case, *The Lorax* was challenged in a logging town for its negative view on deforestation (Beder, 2002, p.172). Corporate influence continues to spread in the educational system. Schools have corporate sponsors for everything from sports equipment to classroom furniture. Corporate influence arguably intensifies at the higher education level, where universities engage in a constant search for research funding (Fox, 1997).

Opposition to Environmental Regulations

The main source of opposition to environmental regulations comes from established resource extraction industries as well as the newer chemical, electronic, transportation, and energy industries, including logging and mining, electric companies, chemical manufacturers,

nuclear power companies, and auto manufacturers (Cox, 2006; Bruno, 1998; Doyle, 1992). When faced with the possible advent of unfavorable environmental regulations, corporations employ greenwashing techniques to convince lawmakers and voters that the regulations will cause more harm than benefit. Opponents of environmental regulations use fear tactics based on faulty science in order to convince residents as well as lawmakers that such legislative action will result in layoffs and hinder development. These claims are often false and fail to account for the new jobs and technologies that will be created in order to attain compliance. Coal industry supporters argue that the environmentally destructive mining method of mountaintop removal is necessary for employment in the Appalachian region. However, mountaintop removal typically employs less than one percent of West Virginia's workforce and the mechanized mining technique actually results in a decreased demand for labor (Fox, 1999).

A common approach used by industries opposed to environmental regulation is the discrediting of science used to draft legislation and the promotion of the efficacy of de-regulation (Beder, 2002; Bruno, 1998; Coddington, 1996; Cox, 2006; Ehrlich & Ehrlich, 1996; Harrington, 1996; Karliner, 1997; Nakajima, 2001; Patel, & Rosset, 2005). By discrediting the science behind the law, industry organizations are able to change laws to suit their needs. The technique of "twisting the findings of empirical science" for political and personal gain is called brownlashing and has become increasingly common in the past several decades (Ehrlich & Ehrlich, 1996, p. 11). Brownlash plays on human fears and lack of public scientific knowledge. Brownlashing differs from greenwashing in that it is used specifically to dispute scientific evidence for political purposes, rather than to increase corporate profits. However, discrediting the science behind environmental laws makes it easier for corporations to continue environmentally damaging practices.

Not only do corporations go to great lengths to convince government agencies to believe their greenwash, but they also make it easier for politicians who do not want to support environmental legislation to support "dirty" industries (Beder, 2002). In an era of heavy industry lobbying and campaign contributions, this becomes extremely important. If a company is able to convince the public of their environmental stewardship, people will be more accepting of their presence and the government will not have to impose strict regulations that may cost them industry support. For example, a power plant with effective green PR will benefit themselves in that they will gain easier entry into a community than would their competitor with a reputation for pollution, but they will also benefit anti-environment administrations who do not have to make the effort to please both the public and the industry.

In one example, lobbyists for the National Mining Association convinced the EPA to change the wording in the Clean Water Act to classify mining debris as “fill” rather than “waste” by gaining the support of influential politicians. A seemingly minor adjustment, this change allowed the continuation of the extremely harmful practice of mountaintop removal coal mining. When the mountaintop is removed, the debris is dumped into streambeds in valleys below the mountain, causing numerous environmental problems, such as water pollution, erosion, deforestation, and loss of biodiversity (Fox, 1999). Environmental organizations were able to prohibit the mountaintop removal because the Clean Water Act prohibited the dumping of waste in streams. The coal industry used its political influence to change the “waste” to “fill,” allowing the harmful process to continue (Cox, 2006). Coal/mining industries were also successful in changing the wording of the Surface Mining Control and Reclamation Act (SMCRA) of 1977 to further facilitate mountaintop removal (Kubasek and Silverman, 2008). These changes have resulted in the continuation of mountaintop removal, which would be an economically infeasible practice otherwise. The coal industry’s direct involvement in producing these changes creates a discrepancy between their claims of environmental responsibility and their business decisions. When the coal industry takes actions like these, which result in environmental degradation, their commitment to environmental stewardship should be questioned despite attempts to decrease the environmental impact of the burning of coal through the development of clean coal technology.

Another example of corporate and industry influence on legislation relates to the Wise-Use Movement. Based in the western United States, the Wise Use Movement is an organized lobbying effort composed of landowners and interested industry groups that work to protect property rights and prevent restrictions on development such as wetland protection or endangered species habitat protection.² “Aggressive mimicry,” or the practice of giving pro-industry groups names that are similar to environmental public interest groups, was born out of this movement (Ehrlich & Ehrlich, 1996, p. 16). The National Wetlands Coalition, for example, does not function as a wetlands protection group, as its name suggests, but instead promotes construction and development on wetlands, (Ehrlich & Ehrlich, 1996). Aggressive mimicry is an insidious form of greenwashing that plays on human ignorance and the impracticality of investigating each

² Wise-use proponents promote the concept that environmental regulations hinder economic growth and go to great lengths to market this idea to landowners. Industry leaders work to convince landowners that environmental legislation is compromising their property rights when the legislation actually has minimal impacts on the average landowner.

group. The tactic is effective because people see that an “environmental organization” supports a particular piece of legislation or industry proposal and assume that the action will not be detrimental to the environment. Industry tactics such as these have had considerable success in blocking the formation of environmental legislation (Athanasiaio, 1996; Cox, 2006). Supporting or forming industry groups under the guise of environmental stewardship is one of the more deceptive components of a corporate greenwashing campaign.

Because it is difficult to secure voters by passing preventative environmental laws that people are reluctant to support, the current political culture typically responds to environmental crises instead of preventing them. While this is changing somewhat with the more recent advent of preventative pollution controls that became more prevalent with the passage of the Pollution Prevention Act of 1990, “end-of-pipe” regulations are by far the most prevalent type of environmental regulation in the United States (Kubasek and Silverman, 2008, p.157). With such regulations, the pollution is managed after it has been produced and the problem is not solved. End-of-pipe regulations attempt to treat the negative results of pollution, such as cleaning up contaminated water, but they do not serve to correct or modify the action causing the pollution (Kubasek and Silverman, 2008, p.135). Nina Nakajima writes that these tools “enable corporations to lead the public to believe that for example, cars with catalytic converters clean the atmosphere, cars that run on unleaded gasoline are “green,” herbicides save endangered species, global warming is good for us, and logging companies are the best stewards of forests because they avoid forest fires by clear-cutting” (Nakajima, 2001, p. 334). End-of-pipe regulations make greenwashing easier because corporations are able to market a slew of solutions that may or may not be effective to the environmental problems caused by our actions.

Environmental Advertising Regulations

A major problem that facilitates the continuation of greenwashing tactics is that there are currently no federal laws governing environmental marketing, advertising, or corporate environmental policy statements. Environmental advertising is subject to the Federal Trade Commission’s (FTC) rules on advertising in general, but these laws are ineffective for green marketing claims owing to the expensive, time-consuming adjudication process as well as the FTC’s lack of technical expertise on environmental matters (Cohen, 1991; Ludwig & Ludwig, 1992; Rathe, 1992; Welch, 1993). The FTC has drafted voluntary guidelines for environmental marketing, but these guidelines are not enforceable, minimizing their effects (16 CFR § 260.2). Without national uniform environmental advertising regulations, there is tremendous potential for

consumer confusion and skepticism due to unclear and misleading environmental advertisements and claims, a situation that harms not only consumers, but also manufacturers and marketers, who are wary of making false advertising claims (Avallone, 2006; Cohen, 1991; De'Souza, 2004; Hartma, Ottoman, & Stafford, 2006; Greenberg, 1991; Laufer, 2003; Lueher, 1991; Polonsky, 1994; Polonsky et. al., 1998; Rathe, 1992; Welsh, 1993).

Interest in the regulation of environmental claims began to grow in the 1990s. In Minnesota, Attorney General Herbert H. Humphrey III initiated a landmark campaign against Mobil Chemical Company (now Exxon/Mobil), for claiming that their Hefty trash bags were biodegradable. The bags were injected with a chemical that made them photodegradable, but since the bags saw no sunlight in landfills or incinerators, they were essentially not biodegradable. Mobil was attacked for greenwashing and conceded, retracting their claims. Humphrey saw environmental claims on packaging as a valuable tool that served as both a method to increase corporate environmental responsibility and a method to increase consumer-buying power. He also saw the danger in uncontrolled and faulty claims, so he strove to create a regulatory equilibrium that would satisfy both consumers and producers. To accomplish this goal, Humphrey initiated other legal actions against various offenders and issued two reports containing guidelines for environmental marketing. The reports did not command legal compliance, but did have some positive effects since many companies hoped that voluntary compliance would prevent the formation of legally binding regulations (Coddington, 1996).

Federal Green Marketing Guidelines

Following the Mobil case, some manufacturers began to express interest in national green marketing guidelines, as it was too difficult to follow the varying state requirements. From autumn of 1990 through July of 1991, more than 25 lawsuits were filed against various manufacturers over the validity of their product claims. Something needed to be done. In 1992 the first federal guidelines for green marketing were issued by the Federal Trade Commission and published in the Federal Register (Coddington, 1996).³ The guides are found in part 260 of section 16 in the Code of Federal Regulations. The regulations

³ Around the same time the US federal guidelines were being drafted and implemented, the International Organization for Standardization (ISO) was drafting an international set of environmental marketing guidelines with the goal of standardizing corporate environmental claims around the world and improving product and organizational sustainability (D'Souza, 2004; Kuhre, 1997). The ISO wanted to develop a "formula to provide organizations throughout the world with a common approach to environmental

apply to environmental claims included in labeling, advertising, promotional materials and all other forms of marketing, whether asserted directly or by implication, through words, symbols, emblems, logos, depictions, product brand names, or through any other means, including marketing through digital or electronic means, such as the Internet or electronic mail. (2007)

However, the regulations are only “guides,” not legislative rules under section 18 of the FTC Act, so they are not enforceable and do not have the full effect of law (16 CFR § 260.2). The guidelines were created to serve as a model for industry as well as state and local governments on which to base their green PR regulations, but have no legal clout (Cohen, 1991; Greenberg, 1991; Ludwig & Ludwig, 1992; Luehr, 1991; Polonsky et al., 1994; Polonsky, 1998; Rathe, 1992; Welsh, 1993). They do not preempt any federal, state, or local regulations on environmental marketing. This means that states are permitted to have either stronger or weaker state regulations and multiple states do enact stronger laws, with California being the frontrunner in this area (Rathe 1992). However, many states do not have adequate funding for enforcement, making many state regulations ineffective. The guidelines describe what information an environmental claim should include and emphasize that all claims should be substantiated by evidence. They define various terms and phrases commonly used in environmental advertisements, including “source reduction,” “recycled content,” and “ozone safe” (Coddington, 1993, p.110).

The lack of government regulations on the PR industry poses a major problem for the effectiveness of green marketing. Until recently there were no guidelines whatsoever for the meanings of common phrases used to connote environmental responsibility. Producers would stamp their goods with bogus environmental claims that no one understood. This problem is compounded by the fact that many consumers are environmentally illiterate and cannot make responsible environmental decisions. Poor environmental literacy is a separate problem and one that the green PR industry cannot be expected to correct, but a problem that PR firms should not take advantage of by resorting to trickery. Without a legal definition for terms like

management” (Kubasek and Silverman, 2008, p.145). The standards came to be called the ISO 14000s. ISO 14001 relates to a company's environmental management system (EMS) and is the only one of the standards to require certification. This certification as well as compliance with other standards is required for trade with some countries (Kubasek and Silverman, 2008). Certain parties contest the effectiveness of the ISO standards based on a variety of factors, including cost of implementation and consumer perceptions. Clare D'Souza questions whether the standards may be a marketing attempt rather than a worthy environmental solution because companies that choose to participate may be losing a consumer base (2004, p.20).

“environmentally friendly” and “recyclable,” even minimal enforcement is impossible (Avalone, 2006; De’ Souza, 2004; Hartman, Ottoman, & Stafford, 2006; Greenberg, 1991; Lueher, 1991; Polonsky, 1994; Polonsky et. al., 1998; Rathe, 1992; Welsh, 1993). The absence of federal regulation makes it much more difficult to determine if a company is greenwashing.

Eco-Labeling

One strategy that has been investigated as part of the solution to the problem of unregulated and deceptive environmental claims is the implementation of eco-labeling requirements for products and services that make “green” claims (Carolan, 2004; Cohen, 1991; Harrison, 1999; Piotrowski & Kratz, 1999; Rathe, 1992). There are a variety of eco-labels in use around the world, including Germany’s Blue Angel, the Nordic Swan, and the E.U. Euro-flower (Piotrowski & Kratz, 1999). Eco-labels contain uniform information that identifies products and services that meet or exceed certain environmental standards. They are clearly displayed on products for easy consumer identification. They generally have different categories that indicate varying levels of environmental stewardship, a feature designed to encourage competition (Harrington, 1996; Piotrowski & Kratz, 1999). The premise behind eco-labeling is that when consumers are provided with accurate product information they are able to make informed purchasing decisions that will reduce the environmental impacts of manufacturing and consumption.

Challenges for the Future of Green Marketing and Advertising

Not everyone agrees with the idea that greenwashing can be curtailed. Critics of green marketing and consumerism contend that while consumers are busy believing that “buying green” is saving the planet, corporations are getting wealthier and the environment is continuing to degrade. Since overconsumption is a main cause of many environmental problems and both the manufacturing and the marketing industries depend on consumption for economic profit, it is unlikely that either party would seek to reduce consumption. The “treadmill of production” is the driving force behind modern economies. Producers continually look for ways to expand production in order to keep up with the treadmill (Capek, 2008; York, Rosa, & Dietz, 2003). Based on this premise, skeptics argue that all manufacturers who make environmental claims on their products, despite their environmental stance, effectively greenwash. In *The Myth of Green Marketing*, Toby M. Smith recognizes that “one person's 'small awakening' to the ecological crisis is another person's 'marketing opportunity'” (1998, p. 94). Regardless of whether green

marketing will ever be effective or not, the fact remains that corporations are touting their environmentally responsible practices more than ever before. This necessitates an examination of individual business tactics.

Because greenwashing is a common tactic used by businesses and industries, a number of efforts to learn the characteristics of an environmentally responsible marketing campaign have been made. Many of these studies analyze existing green advertisements and classify them according to criteria like intent, effect, motivation, content, and type (Banerjee, Gulas & Iyer, 1995; Gulas, 1994; Iyer & Banerjee, 1993; Karna, Heikki, Virpi & Hansen, 2001; Kilbourne, 1995; Obermiller, 1995; Polonsky et al., 1998). Several frameworks for advertisement content analysis have been developed (Banerjee, Gulas & Iyer, 1995; Gulas, 1994; Iyer & Banerjee, 1993; Kilbourne 1995). These frameworks establish a method for classification and categorization. The intent of advertisement analyses is to identify characteristics common to deceptive green marketing efforts so that it becomes easier to recognize greenwashing tactics. However, much research on greenwashing and green marketing focuses on products that consumers choose to purchase. Since most people do not have a choice in where their electricity comes from, the environmental marketing of coal cannot be analyzed without modifying existing frameworks.

An industry that produces services that most people view as necessary (heat and electricity) needs to be closely monitored for its use of greenwashing tactics. Despite the enormous profits coal and electric companies make producing energy, these companies portray their industry as a public service that provides energy to the public for the good of society. Since the industry is largely non-competitive, this is reinforced by the idea that the companies choose to serve their customers, who should not have to make that decision. The consequences of this practice result in a lack of competition and little for the consumer to do should they disagree with company practices or policies. The poor and politically or economically powerless segments of society are most affected by this lack of choice, which exposes them to disproportionate levels of environmentally detrimental effects.

Environmental Justice

"The abuse of the land always goes hand in hand with the abuse of the people." -- Don West, Appalachian poet-activist (1906-1992)

The current social context is optimal for greenwashing. It is apparent that the poor and disadvantaged segments of society are disproportionately impacted by the world's environmental problems. Because they are exposed to more environmental risks, they are also the targets of more faulty environmental claims, making them particularly vulnerable to greenwashing tactics, a reality that must be recognized when determining an organization's corporate responsibility and environmental stewardship. The cost of so-called eco-products is often considerably more than that of conventional goods and services. Upper class citizens can afford to buy products that are safer and healthier while the poor and those lacking political power are forced to continue using inferior products (Smith, 1998). The wealthy are also able to live in areas with less pollution. Undesirable and hazardous industries that create air, water, and noise pollution, like coal plants and garbage dumps, are often positioned in low-income districts, where the residents have neither the time nor resources to argue their presence, creating environmental justice issues.

This section's purpose is to connect greenwashing to environmental justice. It begins with a definition of terms necessary to understand environmental justice research. These include environmental justice itself, environmental racism, and environmental equity. Next, the difference between two very important concepts, discriminatory intent and discriminatory outcome, is clarified. The beginnings of the environmental justice movement are discussed, followed by an in depth review of the history of environmental racism, in particular. This includes a close look at the first national study on environmental racism. It continues with the associated federal and legal responses to environmental injustice cases, noting the extensive grassroots origins of the movement. Recent changes in research methods and research variations are reviewed. This is followed with an analysis of the different directions environmental justice research has taken more recently, notably research on the issues the rural poor face.

Definitions of Terms

Environmental justice is both a field of study and a movement. Environmental justice issues have been taking place for virtually all of human existence, but the use of the term itself is a much more recent occurrence. Used to describe the principle that "all people and communities are entitled to equal protection of environmental and public health laws and regulations," the environmental justice spectrum is large and varied (Bullard, 1990, p. 495). The United States Environmental Protection Agency (EPA) defines environmental justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with

respect to the development, implementation, and enforcement of environmental laws, regulations, and policies” (Environmental Protection Agency, 2009).

There are a number of terms used within the environmental justice framework. These terms sound similar, but subtle differences between them are important to understanding the environmental justice body of research and the changes that have occurred over time. These differences are also important because of their legal implications. The definitions of these terms vary based on the geographic, historical, political and institutional context of different environmental justice issues (Sicotte, 2008). *Environmental discrimination* can be defined as “a disparate discrimination of a group or community based on race, class, or some other distinguishing characteristic” (Couch et al., 2003, p. 236). *Environmental racism* is a politically charged term that emphasizes the “intentional and deliberate targeting of communities of color for toxic waste facilities” (Monsma, 2006, p. 453). The term is defined by Benjamin Chavis, former head of the National Association for the Advancement of Colored People (NAACP), as “the deliberate targeting of people of color communities for toxic waste facilities and the official sanctioning of life-threatening presence of poisons and pollutants in people of color communities” (Krieg, 1998b, p. 3; Sicotte, 2008, p. 1140). Alternately, Robert Bullard defines environmental racism as

any policy, practice, or directive that intentionally or unintentionally impacts or disadvantages individuals, groups, or communities based on race or color; as well as the exclusionary and restrictive practices that limit participation by people of color in decision-making boards, commissions, and staffs. (Krieg, 1998b, p. 13)

Environmental equity depicts “the problem of disproportionate impacts as a matter of achieving an ‘equitable’ redistribution of pollution.” Dr. Beverly Wright of the Deep South Center for Environmental Equity defines it as the right “of all people to benefit from the environment and to be equally protected from the effects of human use and abuse of it” (Monsma, 2006, p. 453). Environmental equity concerns itself not only with the intentional discrimination of certain societal groups, but disparate impacts as well. There are two areas of concern related to environmental equity: (1) the siting process and the issuance of permits allows a disproportionate number of noxious facilities in minority and poor neighborhoods and (2) environmental cleanup, remediation and regulation enforcement favor white, affluent neighborhoods over minority, poor areas (Huebner, 1999). The differences between the terms have important policy and historical meanings and it is necessary to pay close attention not only to what term is used and by whom, but also the stated and implied reasons for doing so.

The Emergence of the Environmental Justice Movement

The environmental justice movement began in the African American community in the 1970s and was somewhat slow to gain recognition in the environmental policy arena (Bose, 2004). Environmental injustice encompasses issues of race, class, gender, wealth and poverty, and power and powerlessness. The movement began and continues to focus on the disproportionate presence of noxious facilities like toxic waste dumps, municipal landfills, power plants, and garbage incinerators in poor and minority communities (Berry, 2003). Race is largely considered to be the single most important factor determining the location of toxic industries (Attah, 1992; Berry, 2003; Bullard, 1983; General Accounting Office, 1983; Goldman, 1994; Norton et. al., 2007; United Church of Christ, 1987; White, 1992), but there is still some disagreement within the movement over the issue of whether race or economics plays a larger role in explaining environmental injustice (Brulle & Pellow, 2006; Anderton, 1994; Gould, 1986; Zimmerman, 1993). Strong links have been made between environmental inequity and economically depressed communities, so as the movement matures, a number of studies have focused on the environmental justice issues faced by the rural poor, many of which relate to the extractive and agricultural industries (Barry, 2001; Bose, 2004; Fox, 1999; Griffith, Mookherjee et. al., 2001; Tajik & Wing, 2007). The environmental justice movement makes three unique contributions to the creation of a sustainable and democratic society:

1. It has enlarged the constituency of the environmental movement by incorporating poorer communities and oppressed people of color and has created mechanisms for spanning community boundaries.
2. Environmental justice organizations function as community capacity builders that work on campaigns and projects focusing on the common links between various social and environmental problems (resulting in uniting communities over interconnected issues).
3. It has facilitated community empowerment by emphasizing grassroots organizing activities over traditional forms of environmental democracy (Faber & McCarthy, 2001, p. 408).

The environmental justice movement is widely considered a fusion of the civil rights movement and the environmental movement, but some studies also point to the convergence of the antitoxics and environmental health movement (Bullard, 1990; Girdner & Smith, 2002), the occupational health movement, immigration rights activism, Native American and indigenous community activism (Hall, 1994; Hooks & Smith, 2004), as well as the human rights, global justice, and solidarity movements (Faber & McCarthy, 2001). The civil rights connection is

widespread because of the movement's focus on racial discrimination and injustices. The antitoxics movement is also closely tied to the environmental justice movement because the highly publicized Love Canal incident in the 1970s led to intensive environmental justice efforts (Daniels & Friedman, 1999). Love Canal was the first well-known incident of hazardous waste contamination occurring in a largely white, working-class community and thus received tremendous media attention.⁴ The inclusion of whites into a previously African American-based movement created some problems that still exist today. The antitoxics movement spawned the NIMBY (not in my backyard) mindset, which resulted in heightened pressure from white and affluent communities to keep LULUs (locally unwanted land uses) and noxious industries out of their neighborhoods (Bullard, 2005). The Love Canal incident had positive effects on the environmental justice movement because it increased awareness about noxious industries, but it also resulted in setbacks for activists working towards environmental equity. Since more politically powerful (white, affluent) people realized the undesirability of dirty companies in their communities, locating in poor and minority communities became even more desirable for these businesses.

A central area of environmental justice research focuses on the health disparities that result from environmental inequity (Brulle & Pellow, 2006; Derezinski, Lacy & Stretesky, 2003; Morrone, 2008). Disparities between exposures to health risks are also a key component of environmental justice advocates' arguments. Asthma is often a focus of community activists' efforts in this area because the disease is more prevalent in poor and minority communities, asthma rates in the U.S. are increasing at epidemic rates, and the role outdoor factors play in its onset is a topic of debate among the medical and government communities. In the past two decades, the medical community has shifted its widely accepted belief that asthma was a result of psychogenic causes to the belief that asthma is often triggered by environmental conditions. The extent and the specifics of the impact of environmental conditions are still controversial issues (Brown et. al., 2003).

⁴ The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, was passed in 1980 partly in response to the Love Canal incident. A CERCLA tax on the chemical and petroleum industries was instituted in order to clean up abandoned or unwanted hazardous waste sites that pose immediate health or environmental dangers (Superfund sites). The National Priorities List (NPL) was created to prioritize Superfund sites. This Act became both a tool and a source of contention for environmental justice activists (Denq, Constance & Joung, 2000; Futrell, 2000).

Environmental Racism

Research on environmental justice issues began with a 1971 study on environmental racism conducted by the President's Council on Environmental Quality (CEQ). The study's findings were reported in a 1974 Conservation Foundation publication, which described the presence of environmental hazards in urban areas (Bowen, Salling, Haynes & Cyran, 1995; Brulle & Pellow, 2006). However, the study was not comprehensive and resulted in no policy or institutional changes. The environmental justice movement received little national attention until a landmark case nearly ten years later. In 1982 a 500-person group engaged in a six-week protest of the construction of a hazardous waste landfill in largely African American Warren County, North Carolina. Although their efforts were not successful and the landfill was eventually built, this is considered the birth of the modern environmental justice movement because it elevated environmental injustice issues in the public policy realm. It was not the first case of environmental injustice, but is considered a watershed event in the movement's history because it marks the first time African Americans mobilized a national group to protest environmental injustice (Couch, Williams, Halvorson & Malone, 2003; Geiser & Waneck, 1994; McGurty, 2000; Monsma, 2006). The Warren County case began in 1978 when it was discovered that tanker trucks containing PCB-contaminated liquid were releasing their tanks on the side of the road. The incident coincided with the Love Canal disaster, which also involved PCB contamination, which increased the media coverage both incidents received. While activist efforts ultimately failed at preventing the landfill's siting, the incident triggered a series of environmental justice research.

Prior to the Warren County incident, environmental equity was largely viewed within the context of environmental racism. As a result of two series of activities that were prompted by the landmark case, the larger frame of environmental justice became more prevalent, with environmental racism considered a type of environmental injustice (McGurty, 2000). First, two activist groups involved in the Warren County protests, Concerned Citizens and the United Church of Christ Commission for Racial Justice, gave talks together in other communities about environmental racism and the dangers of hazardous waste facilities (McGurty, 2000). Second, a flurry of research on the theory of distributive justice, the cornerstone of environmental justice, led to a 1983 Congressionally-authorized study by the General Accounting Office (GAO) on the maldistribution of waste facilities in the southeastern U.S. (Anderton, 1994; McGurty, 2000; Pellow, Weinberg & Schnaiberg, 2001). The GAO study found that while a majority of hazardous waste facilities were located in African American communities, reasons for the

disproportion were not racially motivated (Pellow, Weinberg & Schnaiberg, 2001). The study's findings were inconclusive, but led to a series of subsequent studies on waste management facilities, which solidified the connection between race and class, determining that poverty and race were direct links to the maldistribution of waste facilities (McGurty, 2000). The Warren County organizing efforts ultimately led to a tri-part transformation of waste management policy: (1) Criteria for determining a sound facility location changed substantially; (2) Waste management policies based on the assumption of the continued production of waste were questioned; and (3) The need for direct community involvement in policy decisions was reinforced due to the potential for disproportionate environmental harm (McGurty, 2000).

Much of the initial environmental research focused on urban situations where poor, minority communities were subject to disproportionate numbers of noxious facilities. An important addition to the body of environmental justice literature is Robert Bullard's *Dumping in Dixie*, a book that uses five case studies in southern states in to "identify the major social psychological impacts associated with the siting of noxious facilities . . . and their significance in mobilizing black community residents" (1990, p. xiv). The book is the first major study of environmental racism to link hazardous facility siting with historical patterns of spatial segregation and inequality in the southeast U.S. Bullard's work has been extremely influential in subsequent research (Brulle & Pellow, 2006).

First National Study on Environmental Racism

The first national study on environmental racism occurred in 1987 when the United Church of Christ Commission on Racial Justice reported a correlation between race and the location of toxic-waste facilities (Monsma, 2006; Pellow, Weinberg, & Schnaiberg, 2001). This ground-breaking study is cited by virtually every subsequent piece of environmental justice research. The study used population data from zip code areas in conjunction with other data from the EPA. Their results indicated a positive correlation between the percentage of minority residents in a zip code area and the number of commercial waste facilities in that area. The study showed that sixty percent of the total African-American population lived in communities where at least one uncontrolled toxic waste facility was located (Monsma, 2006). These findings were significant because of the study's national scope and because it built on the GAO study's results, finding empirical evidence that minority communities contain a disproportionate number of toxic-waste facilities when the previous study could not (McGurty, 2000; Pellow, Weinberg & Schnaiberg, 2001).

The Church of Christ study captured the attention of community and social organizations and the environmental justice movement grew more prominent. Throughout the 1980s and 1990s, the movement became nationally recognized for its strong grassroots efforts. There were two environmental conferences in 1992: (1) The Michigan Conference on the Race and Incidence of Environmental Hazards, which resulted in the first Environmental Protection Agency (EPA) study on environmental injustices and (2) The First National People of Color Environmental Leadership Conference Summit, which issued the Principles of Environmental Justice, the tenets of the movement (Bullard, 2005; McGurty, 2000). The Principles are found in Appendix A. The Summit helped form a variety of regional coalitions and has been extremely helpful in generating support for the movement. It also created controversy and generated disagreements surrounding the issues of whether to embrace African heritage in the movement and whether to include other races in African American environmental justice efforts (Checker, 2004; Monsma, 2006).

Discriminatory Intent versus Discriminatory Outcome

There is some disagreement on the direction of causation between racial discrimination and pollution distribution (Callewaert, 2002; Daniels & Friedman, 1999). A common question relates to the issue of whether minorities “come to” the pollution or the pollution “goes to” them. Some studies have come to the conclusion that noxious industries frequently locate in established minority communities while others find that minorities move to areas with noxious industries because of increased job opportunities and/or lowered housing costs (Krieg, 1998b; Monsma, 2006). In the realm of environmental justice, *discriminatory intent* occurs when a company, industry, or other entity knowingly makes a decision that causes a disproportionate level of risk to fall on a particular community or group of people. In this case, the decision was made with the intent to create a discriminatory effect. *Discriminatory outcome*, in contrast, refers to a situation where a decision results in a discriminatory effect that may or may not have been desired or intended. To clarify, if an electric company decided to locate a noxious facility in a poor community because they knew that the people who lived there would be unwilling or unable to resist their presence due to a lack of political or economic power, this decision was made with discriminatory intent. However, if a waste disposal company made their decision to locate in a particular community based on factors that did not relate to the area’s ethnic and economic makeup, but their actions resulted in discriminatory effects nonetheless, the decision resulted in a discriminatory outcome even though it was unintended. The two terms are significant to the environmental justice movement because legally, it is much more difficult to prove

discriminatory intent than it is to prove discriminatory outcome. Within this discrepancy lie further differences, including whether the disproportionate presence of noxious facilities in minority communities is a deliberate act of racism or an effect of the industry practice of following the path of least political resistance (Bullard, 1990; 2005; Derezinski, Lacy & Stretesky, 2003; Girdner & Smith, 2002; Pellow, 2004).

There is some evidence that the definition of environmental justice is evolving towards disparate impact or discriminatory outcome rather than discriminatory intent (Huebner, 1999; Sicotte, 2008). However, multiple court decisions reinforce the verdict that discriminatory intent is necessary in order to prosecute industry actions.⁵ Therefore, there is no legal remedy for disparate discriminatory environmental impacts, a major problem for environmental justice advocates and the many communities who suffer from environmental inequities.

Federal and Legal Response

Environmental justice was recognized federally by the Clinton administration in 1994 when the President issued Executive Order (EO) 12898 and created a U.S. EPA office of Environmental Justice (Bullard, 2005; Couch et al., 2003; Huebner, 1999; McGurty, 2000; Monsma, 2006). The EO mandated that all federal agencies “to the greatest extent practicable and permitted by law” include environmental justice as part of their missions by identifying and addressing “disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations (Monsma, 2006, p. 459). This executive decision was likely motivated in part by a 1992 study by the National Law Journal that highlighted the disparate enforcement of environmental laws by the EPA (Pellow, Weinberg, & Schnaiberg, 2001). The Clinton Executive Order’s mandate and the creation of the EPA office are considered some of the movement’s greatest achievements. However, the order

⁵ When section 14 (Equal Protection Clause) of the Fourteenth Amendment has been used to challenge industry siting or production decisions, the courts repeatedly assert that intent is necessary. An early, important case that created precedent for future decisions is occurred in 1977 with *Village of Arlington Heights v. Metropolitan Housing Department Corp.*, which held “that a race-neutral law with a disparate impact on minorities or low-income individuals will only violate the Equal Protection Clause if the enacted law is discriminatory in its intent” (Monsma, 2006, p. 461). *Alexander v. Sandoval* (2001) resulted in a decision that “closed the direct route to private enforcement of the EPA’s disparate impact regulations by using Title VI” of the 1964 Civil Rights Act (Monsma, 2006, p. 463). The decision was reaffirmed by *South Camden Citizens in Action v. New Jersey Department of Environmental Protection* (2001) and *Gonzaga University v. Doe* (2002).

does not have a stated method for implementation and is not judicially enforceable. It reinforces Title VI of the Civil Rights Act of 1964 for use as a private course of action in environmental justice complaints based on a rights violation by an administrative agency, but this approach has proved to be ineffective and to date, no environmental justice cases have been won according to this procedure (Bullard, 2005; Callewaert, 2002; Monsma, 2006). Recent research also suggests that the EPA has failed to consistently implement EO 12898 in regards to the Superfund program, which is evidenced by the fact that data show Superfund equity to be worsening since the order's creation (O'Neil, 2007).

A Grassroots Movement

Environmental justice advocates view legal victories as necessary to the movement's success because judicial affirmation of the goals of environmental equity and justice legitimizes activist and community efforts. However, legal successes within the movement have been rare. One problem contributing to the movement's difficulty in securing favorable legal decisions relates to the lack of a universal method for measuring distributional inequalities in pollution and environmental protection. Far greater success in meeting the movement's goals has come from community empowerment and pressuring government agencies and businesses to change their practices (Monsma, 2006). Some argue that the intense lobbying for environmental protection done by mainstream environmental organizations on behalf of the American public has resulted in a reduction in citizen participation in the formation of environmental solutions (Monsma, 2006). The environmental justice movement, on the other hand, employs a strong grassroots, "bottom-up" approach that relies heavily on widespread citizen involvement (Checker, 2004; Faber & McCarthy, 2001). This approach is beneficial for minorities and the poor, who are not only underrepresented in many national environmental organizations, but also are affected by problems generally not addressed by these organizations.

Recent Changes in Research Methods and Research Variations

There are three main economic theories about how environmental justice occurs: (1) Pure discrimination in siting decisions; (2) Differences in the willingness to pay for environmental amenities based on income and education; and (3) Differences in the probability of communities to engage in collective action against the location of the polluting site (Couch, Williams, Halvorson & Malone, 2003). The differences between these theories and research tactics can impact study results. A multi-dimensional approach that includes class, status, and power

indicators is necessary in order to account for the different dimensions of social inequality (Anderton, 1994; Callewaert, 2002; Denq, Constance & Joung, 2000; Krieg, 1998b; Pellow, Weinberg & Schnaiberg, 2000).⁶ Historically, environmental justice research resulted primarily in proving the existence of environmental injustice and racism (Asch and Seneca, 1978; Bryant and Mohai, 1992; Bullard, 2000; Freeman, 1972; Schnaiberg, 1975; United Church of Christ, 1987). Current research expands upon prior findings and attempts to uncover why and how this injustice occurs (Callewaert, 2002; Pellow, Weinberg, & Schnaiberg, 2001). By learning why injustices occur, we become better equipped to reduce their presence. It is necessary to recognize the importance of historical precedence in the study of environmental issues (Krieg, 1998b; Monsma, 2006). On an individual basis, complete histories of community formation and facility compliance are essential components of the formation of meaningful conclusions (Callewaert, 2002; Checker, 2005). Knowing the history of cases of environmental inequity allows for a better understanding of potential indicators of future injustice.

Some of the more recent environmental research focuses on the tactics that produce positive community organizing outcomes. The community is often taken for granted by the corporation and instead of treating community members like valued stakeholders, they are viewed as an obstacle to be dealt with through public relations or community outreach efforts after business decisions are made (Berry, 2003). A study of three demographically similar (small, largely African American, economically depressed) communities in Alabama identifies three characteristics that are instrumental to grassroots activism success: (1) organizational approaches that emphasize active participation and self-education; (2) the presence of responsive local political leaders who support open public debate prior to making siting decisions; (3) county support for community efforts (Merit, 2001). The level of community involvement in the

⁶ Studies on environmental injustice have employed different tactics, resulting in inconsistent findings for a variety of reasons, including (1) variation in units of analysis used between studies (Anderton, 1994; Denq, Constance & Joung, 2000); (2) variation in statistical techniques employed (Denq, Constance & Joung, 2000); (3) the use of physical or absolute indicators (Denq, Constance & Joung, 2000; Krieg, 1998a); (4) inclusion or exclusion of status and power dimensions of injustice (Denq, Constance & Joung, 2000); (5) variations in geographical scope (Denq, Constance & Joung, 2000); (6) inclusion or exclusion of long-term spatial history (Denq, Constance & Joung, 2000; Pellow, Weinberg & Schnaiberg, 2001); (7) researcher bias (Denq, Constance & Joung, 2000; Krieg, 1995); and (8) researcher error (Denq, Constance & Joung, 2000; Krieg, 1998a). The Krieg study came to the conclusion that different indicators yield disparate statistical results, which influence researcher interpretation of the types and degree of environmental injustices (1998a). Using the appropriate geographic unit for data analysis is also very important (Anderton, 1994; Bowen, Salling, Haynes & Cyran, 1995; Derezinski, Lacy & Stretsesky, 2003). This depends on the specific research question and study purpose. Using too large a unit of analysis can result in “aggregation errors” and “ecological fallacies,” that result in conclusions that do not hold true in analyses of smaller units (Anderton, 1994, p. 233).

corporate decision making process is often minimal; this is something the environmental justice movement seeks to change. A general environmental justice objective is the addition of compulsory community input to existing regulatory compliance (Berry, 2003). However, activist efforts are stunted by industry efforts to make them appear irrational, hysterical, or uninformed. It is difficult for many of the communities negatively affected by noxious industries to challenge corporate decisions because as long as the process is in compliance with zoning laws and environmental regulations, there is little they can do (Berry, 2003).

Environmental Justice and the Rural Poor

The majority of environmental justice research pertains to minority groups living in urban areas. Far less work has been done on issues affecting rural, white, impoverished people and an alternate set of tools is necessary to address these types of environmental injustices. Situations affecting these people have different characteristics than those in cities, making additional research in this area necessary for a complete understanding of environmental inequity. Many studies on the environmental injustices faced by the rural poor investigate the environmentally, socially, and economically destructive practice of mountaintop removal mining. Mountaintop removal occurs in the Appalachian region, more specifically in West Virginia and Kentucky, where the land's topographic history and long history of coal mining make this mining method attractive to producers (Fox, 1999; Goodell, 2006; Loeb, 2007; Pancake, 2007; Reece, 2006; Shnayerson, 2008). Maria Gunnoe, West Virginia resident and activist, became involved in the fight against mountaintop removal when she and her daughter were almost killed by a flood caused by the dumping of mining waste into a valley next to her home in 2003. Similar flooding occurred on her property six times over the next three years (Goodell, 2006). Another cause of flooding is the overflow of slurry ponds. Slurry spills cause human deaths and injuries as well as destruction of property, as in the 1972 disaster in Logan County, West Virginia, when a slurry pond overflowed, causing Buffalo Creek to flood and 125 people died. They also have severe ecological consequences, including water pollution and ecosystem decline (Erikson, 1976).

While different from urban environmental inequity, mountaintop removal and coal extraction in general are classic cases of environmental injustice because a select segment of society bears the brunt of the negative environmental impacts associated with the practice while the benefits are widely dispersed. The entire nation benefits from coal extraction because it creates more than half of the nation's electricity. The coal industry and electric companies profit immensely from coal extraction, yet Appalachia is one of the poorest parts of the country. This

inequitable relationship is common in areas that depend on fossil fuel extraction and production (Buckley, Bain, & Swan, 2005). The social, economic, and political structure of central Appalachia, which is highly dependent on resource extraction for its economic survival, has been compared with that of Third World countries in that it is an economically peripheral region whose natural resources are controlled by outside interests and financed by outside capital (Barry, 2001; Bridge, 2004; Burns, 2007, Fox, 1999; Goodell, 2006; Reece, 2006). Since the location of mountaintop removal is quite remote compared to rest of the United States, it is easy for people to overlook the negative externalities associated with coal extraction and focus only on the benefits.

Moving Mountains: How One Woman and her Community Won Justice from Big Coal, was written by Penny Loeb, author and journalist, in order to expose the environmental and human costs of mountaintop removal (2007). She chronicles the intense citizen struggle against the companies responsible for the practice as well as the government officials whose inaction facilitates the continuation of this mining technique. *Moving Mountains* chronicles Patricia Bragg's struggle against the West Virginia Office of Surface Mining (OSM), coal industry giant, ArchCoal, and ultimately the federal government. The book provides a good example of grassroots action against environmental inequity and the impact of coalition building on perpetrators of environmental injustice.

Rural environmental justice issues differ from those found in urban areas. One key difference is that rural communities are often used to doing without many of the services and comforts that are commonplace in cities, making them less likely to speak up about environmental problems. In a 2001 study on wastewater treatment facilities, methods and problems in small Tennessee communities, findings show that small communities affected by inadequate wastewater treatment in Tennessee are mostly white, under-educated, poor, sometimes elderly, and lacking political power. Affected residents find ways to cope with their wastewater problems, as they do with many problems they face on a regular basis. There is a sense of shame felt by the affected communities, which tend to blame, deny, and minimize their problems (Mookherjee et. al., 2001). Community members feel that the problem of waste treatment, the impacts of which they cannot clearly see, pales in comparison to many of their other problems. Job opportunities in small towns are lacking, so when communities do attempt to organize against toxic industries, they are met with resistance from their families, neighbors, government officials, and employers (Bridge, 2004; Goodell, 2006; Loeb, 2007; Reece, 2006; Schluter, Achim, Phillimore & Moffatt, 2004). The environmental movement seeks to remedy all types of

environmental equity issues and additional research on the environmental problems caused by natural resource-based industries will be a valuable piece of the solution.

A Topic of Continued Research

The environmental justice movement recognizes and embraces the capacity for effective community organizing and activism at the local, grassroots level. Many people become actively involved in the environmental policy arena because environmental justice issues directly affect them or people close to them (Barry 2001, Loeb 2007). This is particularly relevant in issues of rural environmental injustice because of the isolation that some small communities face. The role of these people as activists has the potential to induce positive change in both the social and environmental realms. The environmental justice movement brings together social and environmental activists, who can accomplish more by working together than they can separately. Oppressed people have long been recognized as a weak link for exploitative parties, such as extractive industries. Their empowerment forces those who exploit to be held accountable for their actions. In the case of mountaintop removal in Appalachia, the benefits of the ensuing environmental and social destruction go mainly to the coal company executives and the national energy consuming public, while the costs of the practice are shouldered by the local people, whose lives are not notably bettered by the practice.

Reviewing and analyzing the research others have done on deceptive environmental advertising and environmental justice issues provide a solid foundation on which to base this research. A great deal of data have been collected that explains the many forms that greenwashing can take. Green advertising is more of a salient issue than it ever has been, resulting in continued material for review. Environmental justice has been studied as a movement and a field of study. There is a vast body of data proving the existence of environmental injustice, environmental racism, and environmental inequity. These issues cross cultural, social, and academic boundaries, resulting in an extremely varied collection of research on the many facets of the topic. This research is ongoing and changes along with society's transformations, necessitating continued attention. The work that has already been done on these subjects brings the two themes together in this research, which exposes the link between deceptive advertising and the environmental justice issues associated with promoting clean coal technology as an environmental solution without mention of the environmental injustices the process perpetuates.

CHAPTER 3: CLEAN COAL TECHNOLOGIES, AN OVERVIEW

The meaning of clean coal is unclear and has changed over time, depending on the context in which it is used. The ambiguity is arguably an intentional industry effort to confuse the issue and prevent public dissent. The topic was mentioned in all three of the 2008 presidential debates, with both major candidates expressing their support. Televisions and billboards across the nation extol clean coal, yet many people have no idea what the process entails. To contrast the marketing of clean coal technology with the related environmental justice issues, an overview of the process is necessary.

In light of high oil prices and fears about national energy security, coal has been receiving an increasing amount of attention as an energy source in the United States. It is estimated that a quarter of the world's coal can be found in the United States, making coal an attractive alternative to oil, of which the nation has considerably less (The American Coal Foundation, 2007). However, to meet federal regulations on pollutant emission level that are expected to tighten as the science supporting global climate change becomes more widely accepted, coal-fired power plants seek methods to “clean up” the burning process. Used to describe “a new generation of advanced coal technology” that is “environmentally cleaner and in many cases more efficient and less costly,” the phrase ‘clean coal technology’ was introduced in the 1980s as part of a combined government-industry effort to respond to concerns about the implications of power plant emissions on the production of acid rain (US Department of Energy, 2007, pp. 2-4).

This chapter begins with an explanation of why coal is cleaned in the first place. It continues with a description of how the different cleaning techniques work, followed by a more in depth look at integrated gasification combined cycle (IGCC) plants and carbon capture and storage.

The Specifics behind the Technology

Coal provides the United States with 22 percent of its total energy, yet produces 36 percent of its carbon dioxide (CO₂) emissions, making it the most carbon-intensive fossil fuel used in the country (Snell, 2007). The coal burning process also produces the following pollutants: sulfur dioxide (SO₂), airborne particles, nitrogen oxide (NO_x), carbon monoxide (CO), volatile organic compounds (VOC), mercury, arsenic, and toxic heavy metals (Union of Concerned Scientists, 2005). Major contributors to acid rain and ozone depletion, SO₂ and NO_x emissions from coal-fired power plants have been regulated by the federal Environmental

Protection Agency (EPA) under the 1970 Clean Air Act Amendments, but CO₂ was not recognized as an air pollutant and thus not subject to regulation until the 2009 EPA decision (Johnson, 2009).

From a legal standpoint, electric companies and other public utilities face challenges when they attempt to pass plant and production modification costs on to consumers if these modifications are not legally required, creating a disincentive for innovative construction projects (Canine, 2005). Economics play an important role in the modification of coal-fired power plants, which are extremely costly to build and comparably inexpensive to operate. The 1977 amendments to the Clean Air Act included a provision called New Source Review requiring that “all plants built or altered after September 18, 1978, reduce SO₂ emissions by 70 to 90 percent” from original pre-sulfur controls levels (US Department of Energy, 1992, p. 9). This reduction was to be achieved via the first clean coal technological solution, the flue gas scrubber, which operates at the “back end” of the plant, just before the smokestack, and was capable of removing up to 90 percent of SO₂ emissions. The first scrubbers were incapable of removing NO_x and required tremendous amounts of water, resulting in a loss of efficiency (US Department of Energy, 1992).

The distinction between older and newer plants is significant because it means that pre-1978 plants were subject to considerably weaker regulations than their newer counterparts. Regulators included this clause for existing plants under the assumption that old plants built in the 1950s and 60s would soon be retired and replaced with new, more technologically advanced plants. Unfortunately or fortunately, depending on your position, the wording of the ruling exempted “routine maintenance, repair, and replacement,” thus acting as an incentive for plant owners to refrain from making “major modifications” to their plants (Kubasek & Silverman, 2008, pp. 191-192). Therefore, following the New Source Review requirements, most old plants somehow failed to ever require major modifications. Plant compliance with the law was relatively unenforced for the next twenty years until the Clinton administration began a short-lived period of investigation and enforcement that resulted in numerous lawsuits being brought against offenders. When the Bush Jr. administration took over, settlements were dropped and the policy of non-enforcement was reinstated (Kubasek & Silverman, 2008).

The 1990 Clean Air Act Amendments strengthened the original law and affected the coal industry by adding maximum emissions levels of ozone pollutants, including NO_x; imposing stricter SO₂ limits for the prevention of acid rain; recognizing particulate matter as a contributor to ozone depletion; and encouraging the use of market-based principles such as pollution credits

trading (US Environmental Protection Agency, 2007a). These amendments, as well as the inexpensive, cleaner burning oil and natural gas of the 1980s, brought a renewed interest in the development of a cleaner method of burning coal. Congress began The Clean Coal Technology Program in 1986 in response to public concerns about air pollution and acid rain as well as industry concerns about the fuel's decline in use as an energy source. The program's goal was to implement a multi-billion dollar clean coal demonstration program of technologies that had begun development and testing in the 1960s and were expected to be ready for implementation in the 1990s (US Department of Energy, 1992).

Clean coal technologies can be implemented during four steps of coal processing: precombustion, combustion, post-combustion, and conversion.⁷ When the industry currently speaks of clean coal, they are typically referencing carbon capture and sequestration/storage. This is done at integrated gasification combined cycle (IGCC) plants and results in a synthetic gas that creates steam as it is cooled, which is used for electricity generation.

⁷ *Precombustion* cleaning physically removes impurities from raw coal after crushing and washing through the use of separation methods, allowing the coal to burn at a higher temperature and generate more energy. Physical cleaning is performed at many Appalachian power plants, since the region is home to bituminous, high-sulfur coal that contains too much sulfur to meet Clean Air Act requirements (Torrens, 1990). *Combustion cleaning* cleans the coal while it burns via fluidized bed combustion or advanced combustor methods. A common method uses cyclone combustors or slagging combustors, and burns the coal in a separate chamber from the furnace, so that the slag, or mineral impurities, collects in the chamber, where it can be collected and disposed of as solid waste. This process requires high combustion temperatures, resulting in high NO_x emissions (US Department of Energy, 1992). Methods to reduce NO_x levels involve lowering combustion temperatures. *Post-combustion* cleaning is used today and is also how coal was cleaned prior to the emergence of more recent clean coal technologies. Developed at the turn of the century, scrubbers were routinely used in the U.S. beginning in 1967. These scrubbers reduced sulfur content and early models produced a wet paste that was difficult to manage. Later versions are able to produce a dry waste that can be marketed commercially as a component of drywall, fertilizer, or distilled water. Advanced scrubbers can remove both sulfur and NO_x (US Department of Energy, 1992). *Conversion technologies* transform coal into gas or liquid form prior to burning. The most well-known method, integrated gasification combined cycle (IGCC), results in a synthetic gas that creates steam as it is cooled, which is used for electricity generation. The sulfur is removed from the steam and combustion occurs in a turbine that creates more heat, generating additional electricity. This process removes up to 99 percent of the sulfur and much of the NO_x and particulate matter (Torrens, 1990). The gas also has a secondary use; it can be used to create fertilizers and other chemicals. IGCC plants are the current solution to coal's negative reputation. Ten percent more efficient than conventional coal-fired power plants, they reportedly "consume 40 percent less water, produce half as much ash and solid waste, and are nearly as clean burning as natural gas plants" (Goodell, 2006, p. 211). These figures are pleasing to coal producers, plant operators, lawmakers, manufacturing plants, farmers and some environmentalists, making politicians in coal states very happy.

IGCC Plants and Carbon Sequestration

IGCC plants have an additional feature that is also a key aspect of clean coal technology, but one that does not actually involve any actual cleaning of the coal. Proposed as a solution to our nation's intensive CO₂ emissions, IGCC technology allows for the comparably inexpensive, easy capture of CO₂, which can then be stored using the controversial process of geological carbon sequestration (Goodell, 2006). There are currently two experimental IGCC plants in the United States, located in Indiana and Florida, but several more are expected to be operational in the near future.⁸ The plants currently cost 20-25 percent more to build, but these figures are expected to drop in the near future. According to carbon capture and storage (CCS) supporters, electricity prices would not rise as dramatically as the price suggests due to decreased costs for meeting environmental goals (Clean-energy.us, 2006). This is disputed by CCS critics.

Geological carbon sequestration is also proposed for sites other than oil fields, such as gas fields, under the ocean, and in coal beds.

Geological storage of carbon dioxide in porous and permeable rocks involves injection of carbon dioxide into a subsurface rock unit and displacement of the fluid or formation water that initially occupied the pore space. Because the density of injected carbon dioxide is less than the density of formation water, carbon dioxide will be buoyant in pore space filled with water and rise vertically until it is retained beneath a impermeable barrier (seal). A critical issue for evaluation of storage capacity is the integrity and effectiveness of these seals. (U.S. Department of the Interior, 2007, p.2)

⁸ The conversion of coal to liquid and gas is not a new technology; it was developed during World War II by the Germans as a solution to their inability to obtain oil during wartime. Located next to the Freedom Mine, the United States' Great Plains Synfuels Plant in North Dakota resulted from the oil embargo of the 1970s. Lignite, a type of coal with a high water content that makes it uneconomical to ship, is converted into synthetic natural gas and used for fuel. The plant quickly became economically infeasible as the price of natural gas dropped dramatically, but the plant has since been reopened and is now functioning. Operated by Basin Electric, the plant markets and sells the chemical building blocks that result from the gasification process to farmers and manufacturers. The plant has also captured its CO₂ since the 1990s, a process that is cost-prohibitive and very complicated for conventional power plants. PanCanadian Petroleum, located about 200 miles northwest of the plant, purchases the CO₂ and pumps it into the ground in order to push out more oil from its aging oil field. This process is called enhanced oil recovery. While enhanced oil recovery is not a new technology, this is the first time that it has been done with waste product CO₂ (Canine, 2005).

As stated above, the capacity of the CO₂ to remain underground for long periods and the unknown potential effects of leaks are in question because the process has no long-term history, prompting serious controversy over carbon capture and storage.

IGCC and carbon sequestration are the current, cutting-edge clean coal technologies of today. The overwhelming public concern about global climate change has turned our focus from coal's pollutants of SO₂, NO_x, and mercury to CO₂ and how to prevent its release into the atmosphere. IGCC plants produce as much CO₂ as conventional coal-fired power plants; their difference in this respect lies in the ease and cost advantages associated with the capture and storage of CO₂ from IGCC plants. They are efficient in reducing SO₂ and NO_x emissions. They also have an advantage over conventional power plants in the reduction of mercury.

Just behind China, the United States is the world's second largest producer of CO₂ and the largest per capita producer. However, since CO₂ emissions are not currently regulated and a number of coal-fired power plants were built in the 1990s, power companies are hesitant to build IGCC plants due to the high initial construction costs. Electric companies are not permitted to pass on the costs of making improvements to their plants to their customers unless they are legally required to do so, making them even more loathe to begin expensive construction projects (Canine, 2005). There are currently no operating commercial IGCC plants in the United States and one low capacity IGCC plant in Germany (Jha, 2008).

Despite the environmental benefits associated with clean coal technologies, the process does not solve all the environmental problems associated with the burning of coal. In particular, the extraction process and the burning of coal will still harm the people who live in the communities surrounding plant and mine locations. Coal burning of any type still produces large amounts of coal ash, a carcinogen that must be disposed of, and fluidized bed combustion, a type of combustion cleaning, produces more coal ash than do traditional coal plants (Sood, 2008). Coal-fired power plants are also the largest man-made sources of mercury emissions in the United States. The mercury released from burning coal ends up in water, where it harms aquatic life and the people and other animals that eat them (Goodell, 2006). There are other chemicals and waste materials that must be discarded after coal is burned, some of which find their way into drinking water. Perhaps the greatest negative externality of the promotion of clean coal technologies as a solution to the environmental problems associated with the use of coal as an energy source is that it does not do anything to prevent the environmental destruction resulting from mountaintop removal in Appalachia; in fact the extraction process is often left unmentioned in the debate about clean coal.

Consumers find mention of clean coal in the paperwork included with their electric bills, television commercials produced by industry organizations extol the virtues of clean coal, and popular magazines feature advertisements from electric companies marketing the technology as a solution to the environmental and health costs associated with the burning of coal. Many of these consumers are unclear about what exactly clean coal technology is and how it affects them. Clean coal supporters do not mind this consumer ignorance because it is easier to convince an ill-informed public to believe their claims. Clean coal's ambiguous definition is an intentional effort that allows the coal industry to make misleading arguments. The industry does not want people to question the specifics behind the technology; they simply want tacit approval so they can continue with "business as usual." They do what they have to do in order for their product to remain viable and their customers to become comfortable with its use.

Since most Americans have no direct contact with coal, they do not realize the role that coal plays in the generation of their electricity, when in reality, over half of the nation's electricity is produced from coal-fired power plants (American Coalition for Clean Coal Energy, 2008). Still fewer people are aware of the destruction associated with the mountaintop removal mining technique. Carbon dioxide's recent categorization as a pollutant means that its emissions will soon be regulated, meaning electric companies are scrambling to build power plants before the new laws take effect and working to develop cost-effective methods to meet the future regulations.

IGCC and geological carbon sequestration are the most advanced technologies currently available to meet the proposed energy goals of the future. These techniques, if implemented properly and no unexpected problems occur, have the potential to dramatically reduce the nation's pollutant emissions, particularly CO₂. However, the technologies are not currently in use, will not prevent the release of toxins like mercury into waterways, and may be economically infeasible. While the United States has more coal than many other fossil fuels, energy prices are not expected to decrease in the future. As prices increase, the incentive for profit-driven mining companies to take extreme extraction measures is great. Without IGCC and geological carbon sequestration, coal-fired power plants would be unable to meet the emissions goals of the future, a reality that could potentially eliminate our demand for coal as an energy source. However, demand for coal will only increase without regulations on its extraction. The implementation of clean coal technologies may result in less pollution released into the atmosphere, but will have no effect on the destruction imposed on Appalachian communities who have no resources with which to fight for their health and environment.

CHAPTER 4: METHODS AND DATA

In this chapter I present the methods and data used to answer the research question posed in the study:

Q1: Is “clean coal” possible or is the promotion and marketing of such technologies a form of greenwashing with environmental justice consequences for rural communities?

Building on the pre-existing environmental justice and green marketing research (Anderton, 1994; Beder, 2002; Coddington, 1996; Cox, 2006; McGurty, 2000), I begin with a description of the methods used and why I chose them and follow with the data analyzed to address these questions.

This research consists of document and content analysis of the environmental marketing and advertising from the Appalachian coal industry with regard to the issues of greenwashing and environmental justice to help establish whether the techniques used by the coal industry support or fail to support existing theories on greenwashing (Carlson, Grove & Kangun 1993). By examining these forms of public communication from the coal industry as a whole and in Central Appalachia specifically, I can analyze the consistency between industry actions and environmental claims. Central Appalachia has been chosen because of the area’s long history of and dependency on coal mining as well as the extensive use of mountaintop removal in the region. I include marketing efforts directed at different audiences, including customers, investors, and employees in this study. I collected and analyzed the following data from several sources:

- Advertising materials used by coal producers and utility companies including ArchCoal, Consol Energy, Massey Energy, and American Electric Power (AEP). These include company websites, public outreach programs, and print and television ads. Each of these companies extracts and/or utilizes coal from the Appalachian region.

Since a substantial (but decreasing) portion of the United States’ coal comes from Appalachia, it is fitting the area is home to a number of coal producing companies. The coal producers are valuable to this study because as environmental regulations on the burning of coal increase and eastern coal reserves decrease, financial success for the industry depends on compliance with increasingly strict laws, unfeasible without the adoption of clean coal technologies. The manner in which coal companies present their environmental records and improvement efforts is also valuable to this study because of the insight it gives into the extraction-related problems that clean coal technologies cannot mediate or avoid.

- Clean coal promotional material distributed by industry sponsored organizations including America's Power Army/American Coalition for Clean Coal Electricity (formerly known as Americans for Balanced Energy Choices), the National Mining Association (a merger of the American Mining Council and the National Coal Association), Friends of Coal, and the American Coal Foundation.

These groups represent coal industry interests and member lists consist of, among others, executives and employees from coal, electric, railroad, and equipment manufacturer/suppliers. Since coal companies themselves are typically hesitant to express potentially controversial viewpoints or engage in aggressive marketing tactics, these organizations distribute much of the clean coal marketing material.

My research also includes informal participant observation at three public events addressing topics related to clean coal promotion. The events that I attended were 1) a public outreach program sponsored by AEP to promote the company's environmental initiatives and stewardship; 2) an air pollution permit public hearing that included a public education aspect for a proposed power plant in Meigs County, Ohio; and 3) a Coal Briefing Workshop sponsored by the Ohio Environmental Council. A diverse group of clean coal supporters sponsored these public events, which present their perspectives on coal, energy, and the environment. Data obtained from these events complements the analysis of materials collected from the above coal producers, utility companies, and organizations and includes information gathered from event handouts, speeches, and participant comments. In addition to providing complementary data, taking part in these events contributed to my analysis in that they provided examples of the varying techniques the coal industry and clean coal supporters use to spread their message that coal can be an environmentally friendly form of energy. I selected the aforementioned companies and organizations because they are all deeply involved with the Appalachian coal industry and the promotion of clean coal. I supplemented my data with archival materials such as news stories, policy briefs, and government documents in order to provide context, case material, and historical background information.

I root my qualitative analysis in core environmental advertising, and marketing literature, and the marketing of clean coal technology and greenwashing. I evaluate results using past and present environmental justice literature and activist work and juxtapose clean coal supporter claims with the environmental justice issues affecting Appalachia resulting from the extraction, processing, transportation, and burning of coal. This results in a critical evaluation of the

integrity of the marketing of clean coal technology. I explore the concept of whether harm from extraction outweighs benefits of burning coal for energy by examining the social, economic, and environmental trade-offs involved with calculating the costs and benefits of coal extraction.

CHAPTER 5: CLEAN COAL SUPPORTERS

With a marketing budget of 45-50 billion dollars for 2008, the avenues the coal industry uses to spread the message that clean coal is the fuel of the present and future are vast (Edney, 2008). Greenwashing is one tool used. Coal industry leaders know that big changes are coming to U.S. energy and climate change policy. They want to ensure that coal remains a large part of the nation's energy pool and they rely on clean coal's ambiguous meaning to accomplish this goal. Therefore, it is essential they convince lawmakers and the American public that clean coal is the solution to our energy and environmental concerns. The coal industry is an extremely powerful entity capable of molding public opinion and government policy to fit its agenda. There are a variety of outside interests invested in the adoption of clean coal, such as research firms, manufacturing and development companies, and private investors. Their promotional efforts add to industry promotion, increasing the scope and effectiveness of the clean coal campaign. The industry and its supporters benefit from controlling and framing the clean coal debate as much as possible. They do this by maintaining the term's ambiguity and inclusively promoting the technology, from school programs to television commercials.

R&R Advertising and Persuasion, the same company responsible for the successful "What happens in Vegas stays in Vegas" advertising campaign was hired to promote clean coal. Public Relations Account Supervisor Bob Van Raaphorst explains his company's role in the clean coal advertising campaign, which was to design:

a fully integrated marketing, branding and issue-advocacy campaign to educate our audiences on the importance of coal in their daily lives . . . Outreach consisted of grassroots, earned media, paid media and advocacy tactics that created a "surround-sound" effect targeting each of our audiences through all mediums and communications. Grassroots efforts included street teams, walking billboards, mobile billboards and recruitment and mobilization of an ACCCE Army. (Grandia, 2009)

The industry has also been looking to capitalize on the large amounts of economic stimulus money the government has been offering to various industries as part of the American Recovery and Reinvestment Act of 2009. Because coal plant infrastructure is so costly, the industry needs only to convince the government to invest in their ideas, not prove their effectiveness once operation is underway. Once the money has been invested, coal/utility companies can rest assured their investors would not shut them down even if the proposed technology does not end up working as well as predicted since such large sums of money have already been invested into the expensive construction of a new power plant. The extensive costs associated with building a new power plant mean that plant opposition must occur before

construction begins because it is much more difficult to shut a plant down than it is to prevent its initial development (Kubasek and Silverman, 2008). Herein lies the motivation behind the expansive current marketing campaign.

This chapter begins with an overview of the mining and/or generating operations of the four coal producing companies included in this study. I also describe how each company presents their environmental stewardship and markets clean coal on their websites and in public statements. Each company presents a one-sided version of their environmental and mine reclamation efforts, much of which is disputed in Chapter Six. The chapter continues with the other marketing and advertising methods used by the coal companies themselves and clean coal supporters, including community outreach programs and television, radio, print, and internet advertisements.

The Producers

I examine Arch Coal Inc., Massey Energy Company, Consol Energy Inc., and American Electric Power Company (AEP), all of which operate coal mines in Central Appalachia and thus have a vested interest in the stability of the coal industry. AEP is a large electric company that operates both power plants and coal mines in the region, giving them considerable interest in clean coal. The coal and utility industries have been promoting their public image for many years. They have superior public relations skills and the industry's longevity has allowed them to perfect these techniques (Morgan & Jerabek, 1974). Much of these public relations tactics are executed by trade organization and industry front group actions, which I will discuss in the next section of this research. The companies' self-promotional methods illustrate their current focus on clean coal and environmental performance.

Arch Coal Inc.

Based out of St. Louis, Missouri, Arch Coal produces about twelve percent of the nation's coal. The company owns and operates mines in Colorado, Kentucky, Utah, Virginia, West Virginia, and Wyoming. Their Central Appalachian mines use both surface and underground mining techniques (Arch Coal, Inc., 2009). Their company homepage does not specify which mines use mountaintop removal, but Arch Coal does operate multiple mountaintop removal mines, including West Virginia's largest operations in Boone, Kanawha, and Logan, counties (Ward, 1998). Because mountaintop removal has so many critics, it can be difficult to find accurate information about company actions.

They advertise their environmental stewardship and record on their main company homepage, also expressing a commitment to investing in clean coal and coal conversion technologies. The site reads:

Arch supports a variety of clean coal technology research studies. That's because we're committed to making coal an increasingly clean resource that meets the nation's environmental objectives while providing balanced energy . . . We integrate reclamation of the land into every phase of mining. Great care is taken to ensure that the land is restored to a natural and productive state once mining is complete. (Arch Coal, Inc., 2009)

The 'planet' link on the website leads to a wealth of information about the company's past, present, and future environmental initiatives, introduced by the bold quotation: "The soul of Arch Coal resides in the success of our environmental stewardship and our efforts to advance clean coal technologies" (Arch Coal, Inc., 2009). The company also comments on the history of clean coal technologies:

We've seen an impressive reduction in U.S. power plant emissions since 1970. There is every reason to believe that coal-based electricity can achieve similar success in carbon dioxide emission reductions by unleashing the power of human ingenuity to solve our energy and environmental challenges. (Arch Coal, Inc., 2009)

Clearly, the promotion of clean coal technologies is a central focus of the company's business plan.

Past attempts to clean up the coal burning process focused on reducing sulfur emissions, so Arch Coal asserts its long term commitment to clean coal technologies by stating that they mine cleaner-burning, low-sulfur coal. They go on to explain the company's current and future efforts to clean up the coal burning process by declaring their \$8 million dollar investment in research and development for next generation clean coal technologies such as carbon capture, utilization, and storage. The company also discusses mine reclamation actions, showing they understand that concerns about coal are not solely related to its burning, but also extend to the extraction process. They describe environmental and neighborhood involvement awards they have received for their efforts in community improvement initiatives like park building and public infrastructure construction. Lastly, in regard to CO₂-based next generation clean coal technologies, the company also references political figures like President Obama and former United Kingdom Prime Minister Tony Blair as having similar ideas about the potential for coal to be transformed into a clean energy source that can solve our energy and environmental problems.

Massey Energy Company

Based on product revenue Massey Energy is the largest producer of Central Appalachian coal. The company, based out of West Virginia, owns and operates mines throughout Kentucky, Virginia, and West Virginia, with the majority concentrated in the latter. According to the company homepage, of their 44 active mines, nine are surface mines and one is a mountaintop removal mine located in West Virginia (Massey Energy About Us, 2009). While the site only lists one active mountaintop mine, the company has a history of extensive mountaintop removal and is the target of many protests by numerous activist organizations and other groups (Appalachian Voices, 2009; ilovemountains, 2009; Ohio Citizen Action, 2009). They also operate 15 coal preparation facilities throughout Appalachia, where rocks and water (slurry) are separated from mined coal and stored in impoundments called slurry ponds.

The Massey Energy homepage does not mention clean coal technology, but there is a link labeled 'environment' that leads to information about the company's environmental record, reclamation efforts, and current environmental initiatives. They devote much of this section to their water quality improvement efforts. The site states that the company began to focus on improving its environmental performance in 2007. This decision was motivated by public and legal criticism of company actions (explained further in Chapter Six).

Don Blankenship, Massey Energy's outspoken CEO, publicly states, "I don't believe in climate change" (Altman, 2008). He has called environmental supporters and anti-coal activists like Al Gore and James Hansen "crazy greeniacs" (Polansky, 2009). He also said,

All the things the environmentalists told us were important . . . sulfur, NOx, particulates, everything they've talked about for the last 40 years, badgered the industry about and increased the cost of electricity to the poor . . . is still being polluted throughout most of the world . . . It is crazy for them to stand up there and say we have to lead the world in carbon sequestration and storage." (Altman, 2008)

However, in the company's 2008 Social Responsibility Report, Massey says, "Recognizing the increased focus on carbon dioxide and climate change, we [Massey] are taking steps to address emissions issues . . . operations and facilities in the United States and abroad, as well as significant resources allocated to research" (Grandia, 2008). Blankenship and Massey Energy do not talk about clean coal technology on the company website because the company's disbelief in climate change makes them somewhat reluctant supporters of the technology. When asked about the negative effects the coal industry has on the communities located near mines and plants, he asserts that coal improves people's quality of life, ignoring claims to the contrary. Despite his affirmations that burning coal is not contributing to climate change, Blankenship is still a vocal

supporter of clean coal technologies because of the benefits Massey Energy Company will gain from its adoption, as evidenced by the company's investments and public statements.

CONSOL Energy Inc.

CONSOL Energy, of Pittsburgh, began mining coal in 1864. The company currently produces more high-Btu bituminous coal than any other coal company in the United States and provides 6.5 percent of the nation's electricity. CONSOL Energy operates 18 active mining complexes in Kentucky, Ohio, Pennsylvania, Utah, Virginia, and West Virginia. All except one are located in Appalachia and ten are found in West Virginia. The company uses underground longwall mining to produce 80 percent of its coal. The remaining 20 percent is produced using surface mining techniques. Five of the surface mines are located in West Virginia, but the company site does not say which of these are mountaintop removal sites. *The Charleston Gazette* reports, however, that CONSOL owns and operates one large mountaintop removal mine in West Virginia and has a permit request that is currently under review for another site in Kentucky (Ward, 2009).

The main homepage does not contain any information about clean coal or environmental issues, but the 'environment' link leads to the company's environmental position and current initiatives. In addition, the main focus at this link, however, is on CONSOL's reclamation projects and awards they have received for these projects. Under the 'technology' link, the company lists its past, present, and future clean coal investments and projects. President and CEO J. Brett Harvey states, "Our goal is to be a major stakeholder in products that ensure the environmentally sound and efficient use of coal, methane gas, and alternative fuels" (CONSOL Energy, 2009). They are currently involved with the construction of a coal gasification plant in West Virginia and a carbon sequestration test, also in West Virginia. They operate one of the largest private coal research facilities in the country and are involved with a Department of Energy (DOE)-funded carbon capture and storage project called FutureGen (FutureGen Alliance, 2009). The company has also developed a low-cost, low temperature mercury control process and is in the process of testing the method at an experimental plant. CONSOL Energy promotes these research and development projects on their webpage as efforts to comply with environmental regulations, ensure the perpetuation of the American way of life, and provide policymakers with sound scientific information. The company warns that,

Without coal, our lives would be very different. Electricity makes the lives of millions of Americans more productive and prosperous . . . The energy that makes America great

comes from CONSOL . . . this resource is critical to maintaining the way of life enjoyed by so many Americans.” (Consol Energy, 2009)

This is a common argument made by clean coal supporters. It plays on people’s natural aversions to change and implies that coal is necessary for the American lifestyle. While truthful that a shift in our energy profile would result in changes, this argument ignores human adaptability.

In response to the recent passage of the American Clean Energy and Security Act of 2009, Research and Development Vice President Steven Winberg expressed Consol’s concerns about the bill’s emissions reduction timetables. He said,

While we recognize the desire of some to show progress on carbon reduction by the end of the next decade, we are concerned that although Carbon Capture and Storage (CCS) technologies may be commercially viable by 2020, they will not yet be deployed to a sufficient extent to avoid a serious impact on electricity prices and reliability . . . may create economic problems that will make our current circumstances pale in comparison . . . Significant CO₂ reductions will not be achieved by substituting renewable energy for fossil energy, or by relying heavily on conservation. (CONSOL Newsroom, 2009)

These comments about the energy bill show CONSOL’s apprehension about the readiness of clean coal technologies and their ability to reduce emissions at a reasonable cost. Despite this, CONSOL Energy directly supports the adoption of clean coal technologies and the company is actively working to ensure implementation of next generation technology.

American Electric Power Company Inc.

AEP is the largest consumer of coal in the United States and one of its largest electricity generators. The company is headquartered in Columbus, Ohio and serves 5.2 million customers in 11 states, including Arkansas, Indiana, Louisiana, Kentucky, Michigan, Ohio, Oklahoma, Tennessee, Texas, Virginia, and West Virginia. AEP employs nearly 22,000 people and much of its market is in Appalachia. While primarily a utility company, AEP’s operations are expansive and include ownership and operation of power plants, multiple coal mines, fleets of coal transportation vehicles (railroad cars, barges, and towboats), maintenance facilities, and terminal facilities for rail-to-barge transfer. Of their power plants, 73 percent are coal-fired while the rest are powered by natural gas, nuclear, wind, and hydropower. The company is currently aggressively investing in wind power (American Electric Power, 2009). AEP has a large presence in Appalachia and is a strong supporter of clean coal technology, spending a substantial amount of time and resources promoting their green image, as evidenced by their community outreach and advertising efforts. For these reasons, the company is central to this research.

AEP's support for clean coal technology is made clear by the presence of carbon-capture and sequestration technology in two places on the main company site, which reads, "Renewables; greenhouse gas offsets; energy efficiency programs for customers – all part of AEP's approach . . . AEP is leading research into Carbon Capture and Storage . . . Technology holds the key to coal's future, and to AEP's future" (American Electric Power, 2009).

AEP acknowledges that climate change is an important environmental issue and explains their views on the environmental impacts of coal:

We know that coal, as plentiful as it is, is not a sustainable resource and comes with an environmental cost. We expect coal and other fossil fuels to be in the political crosshairs in the push for 'green collar' jobs to increase America's renewable energy production. We support this push for technology and believe that it must include carbon capture and storage and new infrastructure. (American Electric Power, 2009)

The company is involved with numerous research projects and test programs on carbon storage and sequestration. They have already begun testing underground carbon sequestration at their Mountaineer Plant in New Haven, West Virginia and are currently setting up a program to test a new sequestration technology there. The Virginia State Corporation Commission turned down a second proposed IGCC plant in West Virginia because they felt AEP's cost estimates (which would be passed on to consumers) were infeasible (Hohmann, 2008). They were involved with the DOE FutureGen project, but pulled out in June 2009, shortly after the Obama administration revitalized the ailing project (Mining.com News, 2009).

The site also contains extensive information on their reclamation efforts, investments in alternative energy sources, research on recycling mine/plant waste, the company's annual sustainability report, and community programs. In recent years, AEP has made major changes to its environmental corporate policies. These changes are a direct response to a 2007 landmark settlement they paid following an almost decade-long lawsuit filed against them in 1999 by the EPA and multiple environmental organizations in nine northeastern states for Clean Air Act violations at nine of their power plants. The states were involved in the lawsuit because pollutants from AEP power plants caused acid rain to fall east of where the plants were located (Mayhood, 2007). The lawsuit forced the company to make expensive changes to many of their power plants and alter company policies. Besides plant infrastructure modifications, many of these changes relate to communicating the company's environmental improvements to the public, resulting in extensive public outreach efforts and advertisements promoting environmental stewardship.

AEP has been criticized for its environmental record and role in environmental destruction for many years, making it difficult for the company to convince listeners they have improved. People are justly skeptical that such a well-known, widespread polluter can change its ways. Consider these comments regarding the relationship AEP has with its stakeholders,

Our stakeholders challenge us to see "beyond coal." The immediate need, and where AEP can do the most good, is to focus on developing and deploying advanced coal technologies, such as carbon capture and storage, that allow us to use coal in a more environmentally acceptable way. We are asking our stakeholders to help us persuade legislators, regulators and policymakers to support policies and incentives that accelerate advanced coal technology. (American Electric Power, 2009)

The company engages in many forms of community outreach and clean coal technology public education. They sponsor a variety of educational opportunities for students, educators, and adults. They offer tours of reclamation areas, power plants, and mines; educator workshops, such as 'Energy, Economics, and Environment; and classroom educational programs, like 'Learning from Light' (American Electric Power, 2009). AEP teaches students and teachers about these topics from a utility company perspective, arguably making the programs public relations tools rather than true educational efforts. When corporations sponsor educational programs, program content and company motivations must be carefully monitored to ensure the information is unbiased. The promotion of clean coal technologies is a major component of their public outreach efforts.

Community Outreach Programs

In the rest of the chapter I present the additional methods AEP and other companies use to promote clean coal technologies. One tactic clean coal supporters use to publicize clean coal technologies is conducting community education and public outreach programs at which they assemble a group of residents, students, or stakeholders and promote the adoption of clean coal. I discuss three examples of this type of program, each of which involves a very different format from the others.

- AEP Community Outreach
- American Municipal Power (AMP) hearing for an air pollution permit with public education component
- Ohio Environmental Council coal briefing workshop

AEP hired Sandy Nessing as Director of Sustainability in 2006 to improve the company's health and safety record, design and implement sustainability initiatives, and communicate these

projects and changes to the public. Her task is a difficult one due to the company's size, lack of historical emphasis on sustainability, and because, in her own words, "coal is not sustainable" (Nessing, 2009). Her job is to communicate AEP's environmental initiatives and goals to the public. She travels to communities serviced by the company or located in the vicinity of their plants or mines and talks with residents to promote AEP's green image.

For a recent promotional appearance, Nessing and several colleagues visited Ohio University to speak with students, staff, and other interested people about topics like clean coal technologies, alternative energy sources, and the company stance on mountaintop removal. Nessing stressed that AEP's sustainability goals are significant and contrast sharply with its traditional corporate behavior. In the past, Nessing said, the company's response to stakeholder concerns was conservative -- essentially, "This is AEP; this is how we do things." This contrasts with from the current corporate climate, which is much more open to public input, as Nessing presents. She explained,

Expectations of companies are high . . . [They are] held accountable for human rights, environment, many more things . . . It used to be profits, philanthropy, product safety, now they are almost expected to be social service agencies . . . We had to learn how to balance this with shareholder needs. (Nessing, 2009)

In reference to the environmental impacts of extraction, Nessing stated that AEP does use mountaintop-mined coal, but there is no way of knowing exactly how much because the coal from mountaintop mines is mixed with other coal before AEP purchases it. Nessing knows mountaintop mining is a "sensitive issue" and pointed out that for the first time, AEP addressed it in their sustainability report as a topic of pending investigation. When asked if it is a priority to buy coal from companies that do not use mountaintop-mined coal, she replied, "I believe we're going in that direction," but did not offer any supporting evidence or explanation.

When speaking about the company's support and involvement with clean coal technologies, Nessing said that AEP supports the Waxman and Markey Climate Change Bill on carbon dioxide reduction via cap and trade permits, now called the American Clean Energy and Security Act (the Act has since passed into law). This support is a serious change from AEP's early attitudes unfavorable toward government regulations of power plants. The Natural Resource Defense Council says the bill,

opens the door to using the value of the allowances for a wide range of critical needs - supporting investments in the clean energy economy, protecting consumers (especially low-income consumers), dealing with unavoidable climate change impacts, and doing our part to achieve international cooperation against global warming. (Natural Resource Defense Council, 2009)

The company's support is largely related to their strong interest and investments in clean coal technology. Nessing said AEP supports the bill, which calls for power plant emissions reductions, because "It's really hard to convince customers to pay more for using less." The passage of the bill means that utility price increases are legally allowed in order to pay for the implementation of clean coal technologies. Nessing promoted clean coal as a major aspect of AEP's environmental initiatives because of the technology's ability to reduce carbon emissions.

As Director of Sustainability at AEP, Nessing's strengths are not in environmental science but in her communication skills and ability to work with diverse groups of people. Her position is about organizing and communicating, and specialists are used for more technical aspects. Nessing is adamant that her job is not PR-based. She has a variety of responsibilities but, based on her descriptions of her daily activities, she spends a substantial amount of time endorsing AEP's environmental goals and merits and this has the potential for some to argue that her many speaking appointments, including the visit to Ohio University discussed here, are a form of public relations—generating fodder for clean coal skeptics. Many of her answers to questions were purposely vague, one of the Six Sins of Greenwashing (2007), her arguments guilty of the Sin of Lesser of Two Evils, and her claims the Sin of No Proof.

Public education programs like this one are common marketing techniques because they allow companies to present the public with a face and engage in rather intimate interactions with community members. However, they do not reach a large portion of the public and many people will never attend such a program, so companies turn to alternate promotional methods.

AMP Proposed Power Plant Hearing and Public Education

American Municipal Power is in the process of the construction of a new power plant in Meigs County, Ohio. The plant's construction has generated considerable controversy in the area, which is close to multiple other plants and mining locations. On June 2, 2009, the Ohio EPA held an air pollution hearing in light of recent changes to mercury limits in the Clean Air Act. The first half of the hearing consisted of a public education program about the air pollution requirements. I include this event in this research because it was attended by coal miners and other industry figures as well as environmental activists and concerned citizens. These different groups of people had varying opinions on how clean the plant was and the merits of clean coal technology. Their interactions help paint a clearer picture of the opposing sides in the clean coal debate. In this case, coal industry employees pushed the clean coal agenda during the public

comment period at the meeting, showing their support for the plant and accusing clean coal critics of preventing economic development. The hearing is a nontraditional marketing effort and its inclusion here provides an example of the immense variation in the promotion of clean coal.

The main disagreement centered on whether the plant would utilize the best available technology to control mercury emissions, which is a requirement of the Clean Air Act. Plant supporters argued that the new plant would be much cleaner than the other old plants in the area and that it could be easily retrofitted with more clean coal components in the future. Opponents argued that better technology exists to reduce mercury emissions and that the area was already subject to high levels of mercury from other plants. Plant supporters used the words ‘clean coal’ extensively, but the proposed plant will not be outfitted with IGCC technology. Plant supporters stated that the area was already economically depressed and community members need the income that construction and operation of the new plant will bring. They accused plant critics of butting into their business and trying to take jobs from them. This is an interesting situation because those most negatively affected by plant pollution are also its main supporters, a phenomenon not unusual in environmental justice cases where community members feel dependent on industry. Plant and clean coal supporters outnumbered their opposition at the meeting and used their large numbers to their advantage through the intimidation of clean coal critics. The hearing ended with each side convinced their position was right.

Ohio Environmental Council Coal Briefing Workshop

The coal briefing workshop took place on October 23, 2008 at Ohio University in Athens, Ohio. Ohio Environmental Council (OEC), an environmental organization that supports clean coal technology, sponsored the workshop. OEC’s position on clean coal is that coal is going to remain a part of our energy sources, so instead of fighting an unwinnable battle, they should work towards the adoption of clean coal technology, specifically carbon storage and sequestration. The organization does not support mountaintop removal mining and does work to strengthen strip mining regulations. However, their position on clean coal is unpopular with many other environmental organizations. This community outreach effort represents a different type of clean coal supporter that does not stand to benefit financially from the adoption of clean coal.

The workshop featured OEC members, who explained the group’s position on clean coal. It also featured a speaker from Battelle, a large research and development company headquartered in Columbus, Ohio. Battelle is a strong supporter and investor in clean coal technologies and Neeraj Gupta, Senior Research Leader, explained the specifics behind carbon storage and

sequestration and answered audience questions. Multiple audience members had concerns about the safety, reliability, cost, and effectiveness of carbon capture and storage. He responded that carbon sequestration has been tested in multiple locations across the country and that the technology is ready for large-scale adoption. He noted that greater public acceptance and investment in the technology is necessary for the success, hence programs such as this one. He highlighted the environmental benefits of a reduction in carbon in the atmosphere and the community benefits of cleaner facilities.

A number of program attendees had questions about the environmental problems associated with coal extraction, but Gupta was unable to calm their fears. Similar to AEP's Nessing, Gupta's role at the event was one of public relations and he was responsible only for communicating Battelle's message about clean coal. Battelle's interests in clean coal do not extend to its extraction. OEC was sympathetic to their concerns, but their position on clean coal remained firm. Many attendees were surprised to hear OEC's support for clean coal since the large majority of environmental groups see coal as anything but clean. The use of an industry speaker who works for a company invested in the technology's success furthered clean coal skeptics' doubts. The event was advertised as being a public educational program, so Gupta's admission that his presence was related to a need for public support and investment made it appear to be a greenwashing attempt. Coal supporters go to great lengths to make the promotion of clean coal look like a series of individual actions, when in reality many are connected. There are a variety of groups dedicated to achieving this goal and I describe their marketing efforts in the following section.

Industry Trade Organizations and Front Groups

The coal and electricity industries have a vested interest in promoting clean coal technology. However, since they also must maintain some level of neutrality on the issue so as not to alienate customers, investors, and political affiliates with potentially conflicting views, it is common practice for them to rely on outside organizations to broadcast their messages. Trade organizations and industry front groups perform this function. These terms are used somewhat interchangeably depending on the source, but the latter tends to have more deceptive or negative connotations. Both represent the interests and views of their respective industry or group of industries. Sometimes they use the greenwashing tactic of aggressive mimicry by disguising their purpose or members and using nondescript, misleading, or ambiguous names that do not describe their function or goals. The coal industry's associated trade and promotional organizations have

been in a state of constant transformation in recent years, changing names every year or two. The frequent changes help maintain the ambiguity behind clean coal and enhance consumer confusion, which helps the promotion of the technology. I examine the clean coal marketing tactics of the following industry groups: America's Power Army/American Coalition for Clean Coal Electricity, the National Mining Association, Friends of Coal, and the American Coal Foundation.

America's Power Army and American Coalition for Clean Coal Electricity

The American Coalition for Clean Coal Electricity (ACCCE) created America's Power Army in April 2009 as a clean coal marketing campaign. ACCCE was formed in April 2008 when Americans for Balanced Energy Choices (ABEC) merged with the Center for Energy and Economic Development (CEED). This merger was related to an industry decision to use the presidential and congressional campaign focus on energy concerns to help promote clean coal (Edney, 2008). The group promotes the interests of mining companies, coal transporters, and electricity producers and its 45 corporate members include coal producers, utilities, railroads, barge shippers, equipment manufacturers and suppliers, labor unions, and others who benefit from using coal to generate electricity. These members directly fund all promotional efforts and directly influence every action the organization takes (America's Power, 2009). ACCCE

advocates public policies that advance environmental improvement, economic prosperity, and energy security . . . is committed to continued and enhanced U.S. leadership in developing and deploying new, advanced clean coal technologies that protect and improve the environment. (American Coalition for Clean Coal Electricity, 2009)

The many name changes make it incredibly confusing for people interested in the groups' histories to research them. America's Power Army's website, *Americaspower.org* explains that the organization is sponsored by ACCCE, but then goes on to use the two names interchangeably. The site's 'Who We Are' link leads to a list of members of ACCCE. ACCCE also has its own website, *www.cleancoalusa.org*, which contains much of the same information as the America's Power site. The frequent name changes are likely not unintentional, but an effort to confuse people about the organization's origins, supporters, and past actions.

Americaspower.org, states, "Our goal is to advance the development and deployment of advanced clean coal technologies that will produce electricity with near-zero emissions" (2009). America's Power/ACCCE are so prolific in the clean coal advertising campaign, when people refer to "the coal industry" or "big coal," they are often referring to the organization, which

receives a large portion of the coal industry's advertising budget. They sponsor and produce print and billboard advertisements, television and radio commercials, and internet/digital marketing materials, examples of which I include in this study. Their main function and goal is to ensure that the coal industry continues to supply much of the nation's electricity and remain as profitable as possible (SourceWatch, 2009). They are strong advocates of technology as a solution to problems and state, "There has never been an environmental challenge facing the coal-based electricity sector for which technology has not provided the ultimate solution" (American Coalition for Clean Coal Electricity, 2009).

The organization also contributes substantial amounts of lobbying money to politicians who are willing to vote in the interests of the coal industry. From 1990 to the present, the entire coal industry contributed \$22,029,650 to politicians, 80 percent of which went to Republicans (Center for Responsive Politics, 2009). They were very active during the 2008 presidential campaign, using both major candidates' support of clean coal to their advantage. In the past few presidential elections, coal supporters have contributed dramatically more to the Republican candidates, with contributions peaking during the 2000 election, but contributions were more even in 2008, largely because of the clean coal debate. At one point during the campaign, Vice President Biden made a comment that suggested Obama would not support clean coal technology. President of America's Power/ACCCE Stephen Miller immediately called the senator's office asking him to "clarify his comments in a way that expresses his support for a significant future role for coal in this country." Three days later, Obama and Biden did just that, stating that they "support clean coal technology." They also stated that they would form a Clean Coal Jobs Task Force (Power, 2008). Obama-Biden's decisions in this case convey the extreme political influence held by the coal industry and its affiliates.

The organization's website, *Americaspower.org* (2009) has a link on its main homepage called 'Clean Coal, The Next Generation.' The link leads to a page that shows the locations of clean coal research and experimental facilities across the country, of which the site says there is one in nearly every state. The page also links to information about how much cleaner coal is today than it was 35 years ago, an interactive map showing that coal, natural gas, and renewable energy sources are necessary to power an average home, and a glossary of clean coal-related terms. They claim, "With the right investments in technology, we can reduce greenhouse gas emissions and make the science of climate change irrelevant. If we continue to fight about the science, we're going to be sitting here 20 years from now still arguing about it" (America's Power, 2009). This is an example of the Greenwashing Sin of Lesser of Two Evils.

The main site also contains information about the organization's 'Factuality Tour,' which is an extensive coal marketing campaign that is almost exclusively about clean coal. The site even sells clothing and accessories with the tour's logo, which is a marketing tactic in itself as well as a fundraising effort. The organization admits that funding for clean coal technology is inadequate. They comment, "Unfortunately, it has been difficult to get the funding to make this technology possible everywhere. The people who say we've got to do something about greenhouse gases also say they are opposed to increasing the budget for investments in clean coal technology" (America's Power, 2009). Financial difficulties are a main motivator behind the clean coal campaign, despite the high costs of advertising.

The National Mining Association

The National Mining Association (NMA) is "the only national trade organization that represents the interests of mining before Congress, the Administration, federal agencies, the judiciary and the media" (2009). NMA formed in 1995 when the National Coal Association (NCA) and the American Mining Congress (AMC) merged. NCA and AMC were founded in 1917 and 1897, respectively. Its mission is to obtain and secure political support for the mining industry and its objective is to influence the public policy process on issues affecting the mining industry. Members include 325 corporations involved with many aspects of the mining industry. Its staff includes lobbyists, lawyers, communications specialists, and regulatory experts who all work together to promote mining interests to the public and the government. The coal industry is a big part of the NMA, but the organization serves all mining interests.

NMA supports clean coal and issued a report called *Clean Coal Technology: Current Progress, Future Promise*. Its website, nma.org, contains a link to the report, which explains the technology and the benefits of its use. The site says carbon capture and storage technologies "balance economic value and environmental concern – retaining coal as an affordable source of electricity in a carbon constrained world." NMA cites liability issues it must overcome in order for the widespread adoption of clean coal to succeed:

- Determining responsibility for post-closure monitoring;
- Avoiding application of the federal Superfund program to injections of CO₂;
- Avoiding characterization of CO₂ as a waste and CCS activities as waste disposal to avoid triggering expensive "cradle to grave" regulations of the Resource Conservation and Recovery Act (RCRA); and

- Resolving property rights issues, including pore space ownership, trespass and interstate issues relating to CO₂ transportation and placement. (National Mining Association, 2009)

These issues illustrate the mining industry's resistance to federal regulations that make the implementation of clean coal technologies more expensive and difficult for mining companies. Clean coal is currently a main focus of the NMA because of the political issues affecting the coal industry.

Friends of Coal

Friends of Coal, founded in 2002, is a volunteer organization based out of West Virginia with the goal of providing the coal industry with a unified voice and educating West Virginia citizens about the role the industry plays in the state's future (2009). The organization is involved in multiple educational efforts for children and adults. As schools experience more budget cuts, industry-sponsored educational programs become increasingly common, with mixed results. There is great potential for these programs to distribute false information, but teachers appreciate the assistance. The group's 'Coal in the Classroom' program consists of weekly presentations to West Virginia schools, during which speakers teach students about mining techniques, how power plants work, the importance of electricity, and the measures the industry takes to reclaim mines and clean up the burning process. 'Coal in the Classroom' organizer Regina Fairchild said, "We realized that there was a lot missing as far as children knowing anything about coal . . . it is very important now especially with this administration . . . we think this is vital" (Lilly, 2009). Fairchild is referring to the political environment surrounding the clean coal issue and the new emissions caps.

Third-grade teacher Mary Grace Peck commented on the program's potential for controversy. She said, "I'm sure that there are groups that do relay the negative part of coal and the coal industry. I think they're worried about the environment; they want the mountains" (Lilly, 2009). 'Coal in the Classroom' did not talk about the negative side of coal with the third graders. Peck said, "It's very complicated . . . not in the third grade" (Lilly, 2009). Presenter and president of the West Virginia Coal Association Bill Raney said, "It's critical they learn about the environment, the industry," but later criticized mountaintop removal protesters for trying to take away jobs from West Virginians (Friends of Coal, 2009). At a membership drive for the organization sponsored by Walker Machinery, Steve Walker spoke in support of clean coal. He told attendees, "This is not your grandfather's coal industry . . . we love clean coal, and most of these people are complete conservationists" (Ali, 2009).

The American Coal Foundation

The American Coal Foundation (ACF) was founded in 1981 and works to develop and distribute coal-based educational materials for teachers and students. Coal producers, mining equipment manufacturers, electric utilities, and railroads fund the organization's programs. ACF distributes online educational materials, sponsors workshops about coal for educators, and partners with Scholastic, Inc. to create 'The United States of Energy,' a classroom program for elementary students. ACF develops programs about coal mining, burning, reclamation, and clean coal. One of their online lesson plans is called 'Generating Electricity from Coal,' and teaches students about different components of clean coal technology. The lesson plan suggests that teachers ask students what problems they think using coal for fuel might cause and whether they should be regulated (American Coal Foundation, 2009). ACF is not the only organization that brings clean coal into the classroom. As seen above, Friends of Coal engages in the same promotional tactic, as do other groups (Coal Education, 2009). Coal industry groups are exceedingly aware that the promotion of their interests is more effective when it starts with children, who remember these messages for life and spread them to their families.

Print and Billboard Advertisements

The clean coal advertising campaign made its way to many states around the country during the 2008 presidential campaign. People began then and continue to see billboards on highways, billboard trucks driving around city streets, signs in airports, industry employees handing out leaflets, and ads in magazines and local newspapers all promoting clean coal. I include some of these billboards in Appendix B. In heavy coal and swing states like Ohio and Pennsylvania, residents have been bombarded with clean coal images and people around the country report seeing similar ads. Many of these are sponsored by ACCCE/America's Power.

Around the time of the Democratic National Convention, travelers in the Denver airport passed by multiple clean coal ads from ACCCE/America's Power with messages like "Clean coal means we don't have to choose between affordable electricity and a clean environment," "Clean coal means our next president won't have to choose between a clean environment and our economy," and "Clean coal means manufacturing jobs stay in America" (Chasing the Clean Coal Adventure: A DNC Lobby Adventure, 2008). These claims are guilty of the Greenwashing Sins of the Hidden Trade-off, No Proof, and Lesser of Two Evils (Terrachoice Environmental Marketing, 2007). The same messages were found on other advertising forms such as billboards and city busses both in Denver and other parts of the country. The ACCCE street team traveled

the country promoting clean coal, handing out T-shirts, hats, and other merchandise (America's Power Flickr, 2008). I have included photos from America's Power's flickr account in Appendix C.

Families Organized to Represent the Coal Economy (FORCE) sponsored two advertisements in Pennsylvania. One billboard read, "Clean Coal: Now Clean and Green with New Technologies" and the other read, "Coal. Pennsylvania's #1 Fuel for Electricity. Clean and Green with New Technologies" (Ecoscraps, 2008). These billboards were sited in multiple locations around the state.

ACCCE/America's Power paid for a billboard in Pennsylvania featuring an image from their popular television ad that shows an electrical cord plugged into a lump of coal. Following the coal, the billboard reads " = Pennsylvania Jobs" (Silver, 2008). Mining equipment supplier Walker Machinery sponsored a series of billboards in West Virginia that read, "Yes, Coal. Clean, Carbon Neutral Coal" (Dethroning King Coal, 2008). Since coal is not carbon neutral and may never be, the billboard is a classic example of why clean coal skeptics call the clean coal advertising campaign a form of greenwashing. These ads employ nearly all the Six Sins of Greenwashing (Terrachoice Environmental Marketing, 2007).

ACCCE/America's Power printed a series of advertisements in response to The Climate Security Act proposed by Senators Lieberman and Warner that the industry did not support. One ad was printed in magazines and read

Lower Emissions.
Energy Security.
Affordability.
According to Lieberman-Warner, we can't have all three . . . We believe we can.
(Insidious Examples of Greenwashing, n.d)

The ad went on to describe that the Act was flawed, would result in price increases for consumers, and that clean coal would allow for affordable, abundant, environmentally friendly energy.

Billboard and print advertisements are an effective way for the coal industry to spread its message about clean coal, but advertising methods are much more diverse in order to reach a wider audience. Because the future of coal is so closely tied to the adoption of clean coal, supporters use every advertising medium available so they are able to reach the largest group of people possible and make clean coal a household concept. A principle goal of the campaign is to make clean coal an unquestioned, commonplace element of life that is accepted by everybody.

Television Advertisements

As with billboards, the television is a single direction media format, only with far more reach. Watchers passively absorb messages from whatever program or commercial is playing with no interaction opportunities. Should a viewer close his or her eyes, the soundtrack still continues. If the volume is turned down, images and text spread the producer's message. These factors make television advertising particularly worthwhile for clean coal supporters. A September 2008 advertisement that ran during the presidential campaign used footage from one of President Obama's campaign speeches to promote clean coal. The ad included a line from Obama: "Clean coal technology can make America energy independent." It then showed the text, "Clean coal—creating jobs" over footage of Obama saying "And by the way, we can create five million new jobs, in clean energy technologies." The ad implies that clean coal will create five million new jobs, but that is not what the president meant. President Obama did say both of these statements. However, they were not made at the same time and his comment about new jobs and clean technologies was unrelated to clean coal technology, making this advertisement misleading (Anderson, 2009).

General Electric (GE) paid for an ad featuring young, attractive, coal dust-coated miners working to the tune of Merle Travis' mining song, "Sixteen Tons." At the end of the ad, an announcer's voice says, "Thanks to emissions reducing technology from GE, harnessing the power of coal is looking more beautiful every day" (General Electric [Video], 2006). This ad generated some controversy over the presence of the model miners, who do not represent real miners, as well as the obvious dirty nature of the job depicted.

An advertisement sponsored by Hitachi is part of the company's "True Stories" campaign. The four-minute advertisement begins with a shot of a multi-generational fishing trip and features a plant worker and a Hitachi employee talking about a coal-fired power plant outfitted with clean coal technologies. The plant worker says, "In the past, power plants produced energy at any cost. Now we're not only producing energy, but we're producing less pollutants. The air is cleaner." When the commercial goes back to the fishing trip, the worker says, "With having three grandchildren, I want to make sure that what I leave behind . . . there's an improvement, so when they go fishing, that they've got something to fish for" (Hitachi [Video], 2007). The lengthy ad not only explains some of the mechanics behind clean coal technologies, but also has a personal element, connecting clean coal to family and nature. Hitachi sells the concept of nature and depicts clean coal supporters as conservationists.

ACCCE/America's Power Advertisements

America's Power/ACCCE have broadcast a series of clean coal advertisements over the past several years. They have paid for and sponsored more ads than any other single organization and their ads play on televisions frequently. All of the ads close with the text, "Clean Coal. America's Power.org." I present a few of their advertisements here.

One ad played in December 2008 as part of the group's holiday campaign. Called "Frosty the Coal Man," it featured a group of singing lumps of coal. Here is a sample of the lyrics:

Frosty the Coal Man, is a jolly happy soul.
He's abundant here in America and he helps our economy roll.
Frosty the Coal Man, is getting cleaner every day.
He's affordable and adorable and helps workers keep their pay.
There must have been some magic in clean coal technology,
For when they looked for pollutants there was nearly none to see.
(ThinkProgress, 2008)

This ad looks somewhat old fashioned and is reminiscent of early cigarette advertisements, which used cute images and catchy songs to promote their product as fun and harmless. By taking a classic song to which nearly everyone—especially children—knows the tune, ACCCE/America's Power makes it easier for people to remember their message. After seeing and hearing the ad several times, it becomes a memory and people begin to associate Frosty with coal, not snow.

ACCCE/America's Power paid for another advertisement called, "I Believe," which featured a variety of people saying that they believe in a future with clean coal. Some featured lines from the ad are

I believe in the future.
I believe in protecting the environment.
I believe in technology.
We will do this.
With new technologies, we can reduce greenhouse gas emissions and keep energy costs affordable.
We can be energy independent . . . we can, we will. Clean Coal, America's Power.
(America's Power [Video], 2008a)

Another television spot honors American ingenuity in an advertisement that says,

Throughout American history, new ideas have often been met with skepticism, but technology born from American ingenuity can achieve amazing things . . . even lower emissions, including the capture and storage of CO₂ . . . We've made a commitment to clean" (America's Power [Video], 2007).

This ad implies that Americans are capable of doing anything, even making a fuel with such a dirty reputation clean enough to use in an environmentally conscious world. Several of the coal companies featured in this study also use the concept of ‘American ingenuity’ to promote clean coal. This technique positions clean coal supporters as pro-American, making skeptics not just anti-coal, but anti-American as well, drawing upon Communist Red Scare tactics. The ad also invokes a feeling of nostalgia when it draws upon historical instances where Americans were able to accomplish similar feats.

Some advertisements do not even mention clean coal in the ad content, but still say ‘clean coal’ at the end, like ACCCE/America’s Power’s “50% of America’s Electricity comes from Coal” ad, which shows an electrical cord being plugged into a shiny lump of coal. The ad touts the efficiency and low cost of coal and ends with the text, “Clean Coal. America’s Power.org.” The implied message is that all coal is clean and the greenwashing Sin used here is Vagueness (America’s Power [Video], 2008c).

Another ad laments that it would be nice to say “farewell to our dependence on foreign energy . . . adios to rising energy costs . . . so long to out-dated perceptions about coal . . . continue to reduce emissions, including the eventual capture and storage of CO₂.” The ad then goes on to say that if we do not do these things, we might have to “say goodbye to the American way of life we all know and love” (America’s Power [Video], 2008b). The ad contains images of classic American scenes like children laughing and people sitting on their porches. It plays on people’s fears of the unknown by planting the doubt that our lives will change for the worse without coal.

ACCCE/America’s Power also broadcasts a different type of advertisement that features organization president Stephen Miller talking about his goals and mission. One of these ads was broadcast shortly after the group adopted the ACCCE name. In it, Miller says that their mission is similar, but expanded to reach out to policy makers about climate change. He says, “Our fundamental beliefs really haven’t changed. We have to protect the environment . . . (and) provide reliable affordable electricity . . . Electricity from coal . . . is a bridge to America’s energy future” (America’s Coalition for Clean Coal Electricity, 2008a). A similar ad debuted around the same time and contains a message from Miller about ACCCE’s new ad campaign, “I Believe.” He says,

The folks in the ad are a lot like most of us. They believe we can achieve our shared environmental goals . . . while still using coal . . . the next challenge is reducing CO₂ and greenhouse gases . . . we’ll meet that challenge just like we did with other emissions by

investing in new, advanced clean coal technologies. (America's Coalition for Clean Coal Electricity, 2008b)

These are different from ACCCE/America's Power's other style of advertising because they do not contain any cinematic effects. Miller broadcasts the organization's message in a straightforward manner.

Internet/Digital Advertisements

The coal industry began a \$20 million online clean coal promotional campaign in March 2009. Three million dollars of this was put towards digital media programs and the remaining advertising dollars went toward media placement in mainstream outlets. This huge advertising effort is part of an even larger industry-wide marketing campaign. The internet advertising campaign is significant because it allows the industry to reach a segment of the population that would otherwise be unreachable. It also allows for the cross-broadcast of their television advertisements on industry websites and YouTube.

In May, America's Power Army (referred to as ACCCE in this article) ran advertisements on *Washington Post* and *The Hill* websites claiming, among other things, "72 percent of opinion leaders support coal electricity" (Grandia, 2009). The advertising goal was to convince people that the majority of "opinion leaders" (which the ad did not name or describe) support coal (specifically clean coal) as an energy source. However, clean coal skeptics were wary of the ads' claims and looked into their accuracy. The statistic was part of a survey that was debunked by Brian Angliss of Scholars and Rogues due to many sampling errors like a lack of defined margins of error, exceedingly small sample size, and other general problems (Grandia, 2009). These ads engage in multiple Greenwashing Sins.

In March a confidential job description for a public relations position at ACCCE (now America's Power Army) was leaked to the media. Part of the description read that the chosen candidate will

work with ACCCE's senior staff to prepare recommended strategies and tactical plans for engagement in shaping public attitudes and in support of public policy advocacy goals . . . effective expansion of the America's Power campaign in digital media formats (including, but not limited to, online/display, social media, and other digital formats). (Anderson, 2009)

This job posting is clearly a part of the organization's current promotional campaign and an effort to improve their access to internet users.

The coal industry's clean coal marketing efforts utilize multiple advertising media to create a promotional campaign that is greater than the sum of its parts. They hired experienced public relations and marketing experts who are skilled in creating brands for concepts and ideas. By turning clean coal into a brand, it becomes a part of people's everyday vocabulary and remains a salient issue in their minds. Creating public interest and acceptance is a large part of inducing investors to support clean coal technologies. The next chapter analyzes the industry's marketing efforts and contrasts their claims with the environmental justice issues that do not enter the clean coal discussion.

CHAPTER 6: THE OPPOSITION

In this chapter I present arguments made by community members, activists, and environmental organizations who dispute coal industry claims that clean coal technologies will solve the problems associated with using coal as an energy source. Clean coal opponents argue there is no such thing as clean coal for a number of reasons, perhaps the largest being the dirty extraction process. Findings include accounts from residents of mining and power plant communities, scientific evidence contained in academic reports, and evidence obtained by environmental and social justice organizations.

Problems Clean Coal Technologies Will Not Solve

Should clean coal technologies like carbon storage and sequestration become a viable alternative to current coal burning methods, their adoption can reduce some of the pollution associated with the process. However, there are other negative effects that will not be mediated. These are described in this chapter, in Chapter Seven and throughout this work. Many of the effects have far reaching impacts, but the majority result in greater harm to the communities surrounding plants and mine sites. The people who live in these areas are typically impoverished and have minimal political power. They are subjected to a disproportionate level of environmental and economic risk from coal industry actions and when disasters result from mining and burning processes, affected community members have little success when seeking retribution from industry executives. It is very difficult, if not impossible, for individuals to fight “big coal,” so environmental and social organizations form to help fight against these inequities. Their success, however, is minimal at best. Marketing coal as clean despite the associated problems is an injustice to the communities whose situations will not improve from the implementation of clean coal technologies.

Water pollution is one such problem. Mining causes acid mine drainage, pollutes streams and groundwater with heavy metals like mercury, lead, arsenic, and selenium and toxins like sulfuric acid, reducing or eliminating aquatic life and causing health problems for those who drink the water (National Resource Defense Council, 2008). Terry Blanton, from impoverished Harlan County, Kentucky, discovered that the groundwater supplying her well had been polluted with vinyl chloride, trichloroethylene, and multiple other volatile organic compounds (VOCs) when she took her children to the doctor after repeated illnesses and rashes following their baths. She lived next to a plant that manufactured mining equipment. Blanton and several neighbors

convinced the EPA to test their water, which resulted in the excavation of 5,000 tons of contaminated soil. Unfortunately Blanton's story is not an isolated incident. Cancer deaths in the town are frequent (Reece 2006) and countless friends, neighbors, and family members have similar experiences. Stories like these do not make it into the clean coal discussion because it is next to impossible for a poor person like Blanton to stand up to the powerful coal companies that supply her region with the few jobs it has and provide the region's lawmakers with political and financial support.

Producing coal creates other water-related problems as well. When coal is washed, a product called slurry is created. Slurry contains high concentrations of heavy metals, which can harm human and ecosystem health. The slurry byproduct is contained in man-made dams called "slurry ponds" that are a major cause of flooding. When heavy rains occur and these overflow or when the dams simply fail, rivers of slurry are released, flooding and polluting homes, schools, and towns. Slurry spills negatively impact communities and homeowners economically because of their direct potential for destruction, but also because of their deterrence on development in their vicinity and ensuing reductions in property values. "We were making some progress when this disaster hit . . . it really backs you up," said Garry R. Lafferty, deputy judge executive in Martin County, Kentucky, where a major slurry spill occurred in 2000 (Kilborn, 2000).

Slurry spills cause human deaths and injuries and destroy property, as in the 1972 Buffalo Creek disaster when 125 people died and 500 lost their homes. They also have severe ecological consequences. In 2000, when the 72-acre, 200 billion gallon Massey Coal Company Kentucky impoundment along the Ohio River burst, 210 million gallons of slurry were released. The slurry collapsed the mine underneath and flowed into several streams, with some making its way to the Ohio River (Clairborne, 2000). The spill's volume was 20 times that of the Exxon Valdez oil spill and twice that of the Buffalo Creek spill. No human lives were lost, but the disaster polluted drinking water, killed aquatic life, and had lasting negative effects on the area's ecosystems and economic development (Kilborn, 2000).

The December 2008 slurry spill from a Tennessee River Valley (TVA) power plant in eastern Tennessee was 30 times larger than the Exxon Valdez spill and the largest environmental disaster of its kind. The spill dumped an estimated one billion gallons of sludge onto 300 acres, damaging homes, contaminating drinking water with heavy metals, and killing wildlife. No human deaths were reported, but the environmental and economic damage was vast and is still being discovered. The TVA spill attracted extensive media attention and reopened the clean coal debate as environmental organizations loudly argued that the event dispelled the claim that coal

could ever be clean. It also renewed discussion over whether coal ash should be federally regulated as a hazardous material. The TVA ensured concerned residents that the coal ash was safe unless consumed, but many people were not comforted by this assertion. They fear that water cleanup efforts would be inadequate and residue would enter their drinking water. Others are also leery of what will happen once the coal ash dries out and the dust becomes airborne and thus can be inhaled (Dewan, 2008).

One impoundment currently generating some controversy is located 400 yards from Marsh Fork Elementary School in Coal River Valley, West Virginia. A powdered coal silo is also located 150 feet from the school and a 1,848-acre mountaintop removal mine surrounds the school. Community members, activists, and outside parties are worried about the mine and slurry pond because of its proximity to the school. They fear a spill, water contamination, air pollution, or another disaster is likely to harm the many school children in the area. These fears increased following the TVA spill and some parents have already expressed concerns about their children's health (Coal River Mountain Watch, 2009). A 2008 study by environmental firm Ashby-Tucker found that the coal dust in the air surrounding the school exceeded acceptable limits. In the study, Dr. D. Scott Simonton stated

Inhalation of coal dust is known to cause adverse health effects in humans, however, studies of coal dust toxicity are understandably mostly of adult populations. Children are particularly at risk from dust exposure in general, so it is reasonable to assume that coal dust creates an even greater risk for children than it does adults. The sampling to date certainly indicates that dust levels and composition at the school reach a level of concern. Particulate matter at levels found at the school has been shown to cause adverse effects in children. (Biggers, 2009)

The study affirmed residents' concerns about the coal ash and spurred renewed activist efforts for change.

Adequate mine reclamation is another problem with coal production. The people who live near these poorly reclaimed sites are typically impoverished and politically powerless, leaving them with few tools to defend themselves against industry misdoings. A report by the Office of Surface Mining (OSM) found that mine operators in West Virginia are not restoring mined mountains to their "approximate original contour" (AOC) as required by federal law (Ward, 2009b). The report, which was finished in June 2008 but has not been officially released, found that virtually every site they examined did not meet AOC standards and that most reclamation efforts left land elevation considerably lower than required. This contrasts sharply with the producers' reclamation claims as described in Chapter Five. Producers commit several

Greenwashing Sins when they falsely promote their reclamation efforts, including Fibbing and Vagueness. The report's release has been delayed because the OSM has not come up with an action plan to solve the problems they discovered. Both mountaintop removal critics and supporters cite a lack of a standardized definition of AOC as being part of the problem with reclamation. This issue is discussed further in Chapter Seven. The OSM report is another example of the problems caused by coal that clean coal technologies will not prevent. Before clean coal can be advertised as such, other dirty aspects of the process must be corrected—if correction is even possible.

Evidence for Clean Coal Opposition

Massey Energy Company has long been a target of anti-coal activists' protests. They have been involved with a number of environmental disasters, including the Buffalo Creek disaster mentioned above. They are also extremely influential in West Virginia and many residents and politicians fear retribution should they challenge the company. Massey Energy recently pushed for corporate environmental improvement, which coincided with the January 2008 EPA decision requiring them to pay a \$20 million civil penalty for their Clean Water Act violations. These violations included excessive acid mine drainage into Appalachian waterways and multiple slurry spills. This fine is the largest civil penalty issued by the EPA in response to wastewater discharge violations and the case is a landmark settlement that is expected to affect the entire mining industry. As part of the settlement, Massey Energy also agreed to invest \$10 million into programs that would reduce their future violations, set aside 200 acres in West Virginia for conservation purposes, and perform 20 environmental or community projects downstream from their mining operations (U.S. Environmental Protection Agency, 2008). While this outcome is seen as positive by environmental organizations, the damage has already been done and only time will tell if the company will change their future behaviors. The company advertises the actions it plans to take or have already taken as a result of the settlement on their website, but they do not explain that they are legally required to do so because of past failings. They are guilty of the Greenwashing Sin of Vagueness.

Blankenship, Massey's CEO, consistently makes public statements that worsen the company's environmental reputation, such as when he said to reporters, "They can say what they want about climate change, but the only thing melting in this country that matters is our financial system and our economy" (Hohmann, 2008). In reference to the climate change issue, he states "if (U.S. House Speaker Nancy) Pelosi thinks that decreasing CO₂ in this country is going to save

the polar bears, she's crazy . . . if CO₂ emissions are going to kill the polar bears, it's going to happen. What we do here is not going to do it" (Hohmann, 2008). Comments like these made by clean coal supporters help fuel skeptics' assertions that 'clean coal' is nothing more than an industry buzzword used to greenwash a dirty fuel as environmentally friendly.

Other coal companies also make comments that further increase clean coal skeptics doubts that the technology is really an environmental solution. A 2004 memo intended for the CEO of Peabody Energy (a coal company) that was leaked by a PR representative working for CEED (now America's Power Army/ABEC) contained a wealth of PR strategies pertaining to climate change and pollutants. The memo highlighted the group's position that all government-mandated pollution caps should be avoided:

Our goal is straightforward: persuade states that voluntary sequestration activities and technology investments are appropriate policies to address climate change concerns, while government mandatory controls are not . . . In the climate change arena, CEED focuses on three areas: opposing government-mandated controls of greenhouse gases (GHG), opposing "regulation by litigation", and supporting sequestration and technology. (Grandia, 2009).

Evidence such as this highlights the industry's political power and desire to maintain clean coal's ambiguity, making it very difficult to believe the industry is trying to clean up.

Past problems with clean coal technologies also fuel protests. In 2002 AEP bought the town of Cheshire, Ohio, home of the AEP-owned coal-fired Gavin Power Plant. The purchasing decision was related to town member complaints of sulfuric acid pollution that covered the town in a pungent cloud of dust and caused numerous health complaints. The problem began soon after the 2000 installation of selective catalytic reduction technology (SCR) designed to reduce NO_x emissions. The SCR technology had the unforeseen side effect of producing "aerosol sulfuric acid," which caused noxious clouds of toxins that made the town virtually uninhabitable. AEP ultimately bought out the entire town under the guise of needing more room for plant expansion. Residents involved with the buyout were forced to sign papers preventing them from suing the company for subsequent health problems in the future, yet AEP refused to acknowledge the pollution problem's contribution to the buyout (Buckley, Bain, & Swan, 2005). This problem was related to the use of an inadequately tested technology and clean coal critics fear the use of carbon capture and storage will result in a similar outcome.

Clean coal skeptics are also unconvinced of corporate attempts at public outreach like those by Nessing of AEP discussed in the previous chapter. In response to her visit to Ohio University, Gary Houser, an Athens, Ohio city employee who works to implement 2007's Cool

Cities Resolution that was passed with the goal of reducing the city's impact on climate change, said he had "waited 15 years for an opportunity to speak with AEP" about these issues. He was grateful to have the opportunity and was glad that AEP was moving in a more sustainable, transparent, and communicative direction, but he knew that Nessing and her colleagues were hired to speak with the public and he is "worried they're only here to say things that sound green . . . hopefully they take it to heart." He also commented to Nessing, "Everything we're doing here is being negated when we look at the Gavin Power Plant, other power plants [owned and operated by AEP]." Loraine McCosker, Environmental Outreach Coordinator for the Environmental Studies Program at Ohio University, expressed concern about whether Nessing had enough knowledge about the realities of the environmental impacts of coal extraction, particularly mountaintop removing mining and wondered if "we should educate them." People are used to coal industry representatives saying one thing to their faces while doing another thing behind their backs. The clean coal advertising blitz is a clear illustration that the industry knows the public is wary of their claims and evidence of their need to overcome that skepticism. The coal industry's barrage of information about clean coal is designed to reach the widest audience possible and win favor with as many people as possible. Despite this, they are ambiguous and vague about what the process actually entails.

Many clean coal skeptics do not protest clean coal technologies solely because of the problems left unresolved by the process. These skeptics argue that the coal industry is promoting a mythical technology that does not exist nor will be feasible any time in the near future, if ever. They challenge the term's vagueness and lack of clarity. Former vice president, Nobel Peace Prize winner, and founder of the Alliance for Climate Protection Al Gore comments:

those who spend hundreds of millions promoting "clean coal" technology consistently omit the fact that there is little investment and not a single large-scale demonstration project in the United States for capturing and safely burying all of this pollution. If the coal industry can make good on this promise, then I'm all for it. But until that day comes, we simply cannot any longer base the strategy for human survival on a cynical and self-interested illusion. (Gore, 2008)

Gore's statement belies the fact that the technology has not actually been implemented yet despite being intensely promoted and he doubts the industry's ability to do so effectively. Many others feel the same and question how coal can be advertised as clean when the technology is not ready for widespread use.

At a meeting of the National Association of Regulatory Utility Commissioners former commissioner Sheila F. Anthony spoke about a similar topic while addressing FTC-FCC concepts

of advertising laws. She said, "If an ad omits material information, an ad can be deceptive even if everything else in the ad is truthful. This is called deception by omission" (Biggers, 2009a). In other words, by calling coal "clean" without defining "clean," ignoring the aspects that are not clean, or withholding the fact that the technology is not currently in use at a commercial level, clean coal advertisers may be violating advertising laws. Whether the ads are illegal or not, they are misleading and clean coal critics contest their claims.

Anti-Coal Advertisements

In response to the clean coal mega-advertising campaign, anti-coal activists launched a series of ads to counter the coal industry's allegations about clean coal. Anti-coal advertisements challenge the Greenwashing Sins found in clean coal promotional material and call for an honest discussion about the realities of coal that may ultimately move us towards a reasonable, viable alternate energy source. Some of these ads can be seen in Appendix D. Many of the ads focus on the coal industry's omission of the negative effects of coal extraction in their advertisements and the fact that no commercial IGCC plants exist in the United States. One group responsible for a large portion of the anti-coal marketing campaign is called *thisisreality.org* (2009). They created a series of Internet video ads parodying the clean coal ads. Many of their ads are funny and mock the serious messages seen in the coal industry-sponsored versions. However, the humor does not detract from their underlying message that there is no such thing as clean coal. *Thisisreality.org* plays their videos on their website and many can be found on *YouTube* by googling "clean coal."

The Natural Resource Defense Council created a parody of the coal industry site, *AmericasPower.org* with their site, *Americascoalpower.org* (2009). The main site says, "Coalpower: Warming America, Warming the Planet" and the site dispels America's Power's claims about clean coal being the future of America. The site uses humor to attack ABEC/America's Power's arguments and pokes fun at the coal industry group's many name changes and acronyms by calling themselves ACCCCCCC. They also include sarcastic headlines that mimic those used by the industry group, but are actually opposing their viewpoints. The site points out multiple greenwashing tactics. Drawing from the Six Sins (2007), America's Power commits the Sins of the Hidden Trade-off, No Proof, Vagueness, and Lesser of Two Evils. For example, the site reads, "Coal is responsible for 50% of our electricity . . . but 95% of power plant sulfur dioxide emissions." (2009).

We're 100% committed to talking about technologies that could some day make coal a truly environmentally friendly source of energy. That's why we love to use the phrase

"clean coal," even though we'd like to spend the next, oh, 20 or 30 years building new power plants the old dirty way. But you've got to admit -- if we say "clean coal" often enough, it sounds like we're doing it already! CLEAN COAL! (America's Coal Power, 2009)

These headlines make a parody of coal industry claims. The first example points out that the common industry claim that coal provides much of our electricity fails to take ownership of the ensuing pollution. The second example makes fun of overuse of the phrase, 'clean coal' despite the lack of operable IGCC plants.

The Sierra Club created another anti-coal site, called 'Coal is Not the Answer.' They call America's Power/ACCCE "the biggest clean coal pushers in the U.S." and their site contains information refuting claims that clean coal technology will solve the problems associated with using coal for a main energy source. The site argues that coal is not clean, cheap, abundant, a replacement for oil or needed (Coal is Not the Answer, 2009). Furthermore, regardless of whether it is clean or not, the site's main goal is to provide factual evidence that coal is not a viable energy source at all.

Several organizations also put up anti-coal billboards in response to the clean coal advertising campaign. The Nevada Clean Energy Campaign posted a billboard that read, "Coal: A Bad Bet. Choose Clean, Affordable Energy for Nevada" (Perks, 2008). In 2003, the Ohio Valley Environmental Coalition posted an anti-mountaintop removal billboard in West Virginia that read, "Stop Destroying My Mountains—God" (What Part Don't Coal Companies Understand, 2003). A group of fed-up citizens in Giles County paid for and posted a billboard with a direct message to AEP:

Listen to Us, AEP

NO Fly Ash in the Flood Plain of New River. (Appalachian Voices, n.d.)

These billboards function as visual reminders not only for their intended targets, but also for other citizens and passersby who might not be informed about the issues.

Anti-Coal Activism

A diverse group of actors are involved with anti-coal activism. These activists have in common a desire to refute the coal industry's message that coal can be clean, but their backgrounds, inspirations for action, and techniques vary. Some activists are residents of mining or plant communities, while others are politicians, scientists, actors, students, or concerned citizens. Tactics range from letter-writing campaigns, nonviolent protests, rallies, fundraisers,

door-to-door visits, and boycotts. Some activists have the funds to sponsor anti-coal advertisements like those shown in the previous section, but others have time and energy to offer. Each effort is worthwhile and contributes to their cause.

Consider this example. On May 29, 2009, mountaintop removal and clean coal detractors successfully convinced Ohio State University (OSU) President E. Gordon Gee that he should resign from the Massey Energy Board of Directors. For several months Ohio Citizen Action and other environmental/social rights organizations had been pressuring Gee to resign from the Board and sell the university's stock in the company for ethical and environmental reasons. Gee's decision was a major win for the movement because it gives Massey and other companies that engage in mountaintop removal a powerful message that the public does not support the destructive practice. Gee ultimately decided to retire instead of resign, but his decision still carries the same message. As the largest university in the country, OSU represents the interests of a substantial number of people—in and out of Ohio—and Gee's resignation follows the trend of socially responsible investment led by Santa Clara University, which sold its Massey energy holdings earlier in the year. Sandy Buchanan, Executive Director of Ohio Citizen Action, commented:

His resignation has strengthened the new consensus that mountaintop removal is an atrocity that must be stopped. Massey Energy is more politically isolated than ever and the good name of Ohio State University will no longer be linked with one of the great crimes of our time. (Ohio Citizen Action, 2009)

This was a positive outcome for anti-coal activists. There have been other successes and the battle continues, but many other efforts have not been so fortunate.

Elisa Young, from Racine, Ohio, is an anti-coal activist who founded Meigs Citizens Action Now!, a grassroots organization working to stop the construction of more power plants in and around Meigs County. Young's farm is surrounded by four power plants and five more are proposed in an eleven mile radius, including the AMP plant discussed in Chapter Five. The community has the highest asthma and lung cancer death rate in Ohio and is in the top third percentile for the dirtiest air in the country. Young and the other members of her group challenge clean coal technology and believe that its adoption will only decrease air quality and environmental conditions for people who live near plants (Coal Country, 2009).

The previously described school in Coal River Valley, West Virginia has been the site of multiple activist efforts. In 2006 Ed Wiley, town resident and former coal miner walked more than 300 miles to Washington, D.C. to raise awareness about the issue and attempt to get a new

school built in the area. His efforts were unsuccessful (Biggers, 2009b). On June 23, 2009, NASA climatologist and outspoken climate change spokesperson James Hansen, actress-activist Daryl Hannah, and multiple environmental organizations joined local residents and anti-coal activists in an act of civil disobedience at the school and a nearby Massey mine. Hansen and many others were arrested for trespassing and the event increased national awareness of the issue (Biggers, 2009b). Prior to the demonstration, Blankenship (Massey's CEO) challenged Hansen to a debate about climate change the day after the event. Hansen replied that he would do it, but Blankenship did not show up, so he gave a talk by himself. It is likely that Blankenship did not expect the scientist to accept his challenge and was intimidated by his reply, which can be found in Appendix E (ClimateScienceWatch, 2009). To date, resident and activist efforts to relocate the school or halt activity at the silo/mine have been unsuccessful and on June 9, 2009 the West Virginia Supreme Court approved the construction of a second coal silo to be located yards from the school. In response to the decision, Vernon Haltom of the Coal River Mountain Watch said:

The West Virginia Supreme Court has once again proven that coal company profits outweigh law, science, justice, and basic human decency. The court has given Massey Energy the go-ahead to put more tons of fine coal dust in the air that children breathe every school day during their crucial development years. Placing a second coal silo within 300 feet of the school is a clear violation of the intent of the law, which is to protect the public. (Biggers, 2009a)

The Coal River Mountain action has been going on for years and illustrates multiple problems that stem from the use of coal that will continue unabated whether clean coal technology is implemented or not.

Burning Coal: Whose Benefit and Whose Injustice?

This section focuses directly on the issue of whether coal's problems outweigh the benefits of its use through the analysis of several previous studies on the topic. The data presented in this study thus far provides the reader with reasons why coal has been used as a main fuel source for so many years and reasons why the problems associated with its use negate the benefits of coal. This data provides further evidence that coal is not clean and clean coal technologies will not adequately clean up the process. It challenges clean coal supporters claims that burning coal is beneficial to society.

The first study investigated national mortality rates between 1979 and 2005 at the county level (Hendryx & Ahern, 2009). It compared age-adjusted death rates and socioeconomic conditions in Appalachian counties with heavy coal mining, Appalachian counties with little coal

mining, Appalachian counties with no coal mining, and non-Appalachian counties. The researchers estimated the value of statistical life (VSL) lost in comparison to the economic benefits the coal industry brings to these counties finding that socioeconomic conditions were lower and mortality rates higher in coal producing counties. They further found that coal mining areas in Appalachia had higher poverty, mortality, and unemployment rates than all non-mining areas in the region and country and that conditions became worse as mining levels increased. These disparities have increased over time. Both this study and past research suggests that environmental pollutants from coal mines influence mortality rates because female and male rates are higher than average despite the fact that few women are coal miners.

When the study assessed the economic benefits of the coal mining industry in Appalachia, researchers found that the industry contributed an estimated \$8 billion in 2005, which is considerably less than the estimated costs, which are estimated at \$50.01 billion per year. The study concludes that diversifying the Appalachian economy will reduce socioeconomic and environmental disparities that create environmental injustice and public health issues. The authors also comment

Tighter pollution emission standards, carbon tax, cap-and-trade, and carbon sequestration proposals, even if effective, will only address how coal is burned. Such proposals ignore how coal is extracted, processed, and transported prior to burning. These preconsumption processes carry their own significant economic, environmental, and health costs. (Hendryx & Ahern, 2009, p.548)

Another study by Hendryx and Ahern (2008) focused on West Virginia coal mining counties in particular and found that high levels of coal mining and production correlated with increased rates of cardiopulmonary disease, chronic lung disease, hypertension, and kidney disease. The study based its results on telephone surveys of over 16,000 West Virginia adults, 2000 U.S. Census data, and 2001 coal production data. Results showed that men had higher cardiopulmonary risks, but rates of disease in women were still higher than those of women in non-coal producing areas.

A third study on hospitalization patterns in Appalachian coal mining areas had similar results (Hendryx, Ahern, & Nurkiewicz, 2007). This study compared 2001 hospitalization data from West Virginia, Kentucky, and Pennsylvania with 2001 county coal production figures, poverty data, and social capital figures. Results showed that hospitalizations for chronic obstructive pulmonary disease and hypertension were significantly higher for men and women in coal producing regions and that risk for these diseases correlate with increases in coal mining volume. The authors suggest these effects result from exposure to mining particulate matter and/or diesel particulate matter at mining sites.

This data can be compared with the economic benefits of burning coal in Appalachia. The three studies show that coal mining towns have disproportionate poverty, mortality, and illness rates. The implementation of clean coal technologies can solve some of the problems related to coal production and burning if the technology is ever adopted at a widespread level. Clean coal technologies do not affect the extraction process, so these injustices will prevail regardless. In addition, until clean coal technology becomes widespread, its promotion does nothing to help mining communities. These studies are valuable to this research because they help explain why coal will never be clean enough to justify the environmental injustices the process perpetuates, making its promotion as such an industry greenwashing effort.

The clean coal opposition engages in a variety of tactics designed to refute the coal industry's message that coal can be clean. It is difficult for them to challenge such a powerful, well-funded marketing campaign without comparable financial support. Clean coal opposition is a grassroots effort that depends on private donations of capital and time. While many clean coal supporters are motivated by financial reasons, the clean coal opposition is motivated by a sincere concern for the environment and social conditions of people living in extraction regions. Residents of mining and plant towns want to preserve their way of life, the landscapes surrounding their homes, and hope for a different method of economic development in Appalachia. They know that clean coal will not improve their lives and its support comes largely from those who stand to receive the most monetary gains from its adoption.

CHAPTER 7: WHY CLEAN COAL TECHNOLOGY CAN NEVER BE CLEAN

Why does a virtuous man take delight in landscapes? Because the din of the dusty world and the locked-in-ness of human habitations are what human nature habitually abhors; while on the contrary, haze, mist, and the haunting spirits of the mountains are what human nature seeks, and yet can rarely find. (Mason, p. 105, 2005)

There are problems associated with calling coal clean ranging from extraction, production, storage, transport, burning, and electricity generation. The industry does not explain what clean coal means in the technology's promotion because they do not want the public to know or care about the specifics. Many of these problems have already been discussed and they affect us all. A concise table showing the negative impacts of coal can be found in Appendix F. However, because this research focuses on the Appalachian region and its rich mining history, a closer examination of the extraction process is necessary. Mountaintop removal is the most destructive form of mining in existence. Appalachia is the only place in the country where the technique is used. Mountaintop removal is arguably the most damaging effect of coal production that will remain unchanged whether clean coal technology is adopted or not. Environmental equity is defined as the right "of all people to benefit from the environment and to be equally protected from the effects of human use and abuse of it" (Monsma, 2006, p. 453). The people of Appalachia suffer from serious environmental inequities related to coal extraction and mountaintop removal. For these reasons, I focus specifically on the process here. I first provide a brief mining history that shows the events that led to the utilization of the mountaintop removal mining technique and then discuss the many environmental, social, and economic problems the process perpetuates and exacerbates in Appalachia. I conclude with an analysis of the problems with industry claims that clean coal technologies will make coal a clean fuel.

History of Mountaintop Removal Mining

The Appalachian coalfield region, found in Alabama, Georgia, Kentucky, Maryland, North Carolina, Ohio, Pennsylvania, Virginia, and West Virginia, has a long history of coal mining. Coal mining began underground in the late nineteenth century. An extremely dangerous occupation, underground miners faced the danger of ceiling collapses and other hazards as well as the health problems that resulted from inhaling coal dust (Armstead, 2002). However, in places like West Virginia in particular, which seemed to have few other opportunities for economic development, the coal industry was welcomed wholeheartedly by politicians seeking to improve

the state's economy. William A. McCorckle, governor of West Virginia in the late 1890s when the coal industry first began in the state, described his and previous governor Aretus B. Fleming's roles at the time as "advertising agents on a large scale" (Burns, 2007, p. 60). The coal industry thus began the political alliance that continues today in the state.

During the 1930s and 1940s, mechanization began, replacing human coal loaders with machines and resulted in extreme layoffs. Mechanization continued over the years, creating high poverty levels in the Appalachian region. Currently the coal mining industry employs a fraction of the workers it did in the past, yet coal mining companies are still able to convince residents that changes to mining legislation will destroy their already ailing economy (Pancake, 2006).

Mining in the eastern part of the country, which used to provide virtually all the nation's coal, has declined for a combination of reasons.⁹ While eastern coal generates more energy and produces less CO₂ as it burns, it also contains more sulfur, a pollutant regulated under the Clean Air Act. When the Clean Air Act Amendments were passed in 1970, the demand for Western coal skyrocketed, particularly Wyoming coal, and strip mining began to become more prevalent than underground mining (Goodell, 2006). By the 1970s, the health and safety dangers of underground mining were well-known and alternative methods had been developed.¹⁰

Strip mining also requires fewer workers because larger machines that would not be practical underground can be used to move huge amounts of material, making it more attractive to company owners. In Wyoming at one mine site, thanks to new machinery that can move more coal than ever before, 40 million tons of coal were able to be removed a year by 450 workers in

⁹ For one, coal seams have exhausted themselves. As time passes, it becomes more difficult to economically extract coal from the mountains, especially when western coal is much more plentiful and comparably easier to extract. Western coal has created almost insurmountable competition for the Appalachian coal industry. Second, the coal of the east is either bituminous or anthracite. Bituminous coal is medium-hard and contains little moisture, making it efficient in the sense that it burns hotter and produces more heat. Anthracite, found in Pennsylvania, is the oldest, hardest, purest coal. It burns at a very high temperature, contains the least carbon content, and generates maximum energy. Western coal, on the other hand, is younger, softer, and contains less sulfur. The moistest of the western coal is called lignite and the semi-moist coal is sub-bituminous (The American Coal Foundation, 2007).

¹⁰ The top coal-producing states in the United States are Colorado, Kentucky, Indiana, Illinois, Montana, Ohio, Pennsylvania, Texas, Virginia, West Virginia, and Wyoming. Wyoming produces the most coal and West Virginia is number two (The American Coal Foundation, 2007). The western states are much flatter and larger than the eastern coal-producing states, making them more suitable for open-pit mining, which is similar to mountaintop removal in that it removes large quantities of overburden, but different because the original land was flat, so a depression, or pit, is formed (Kubasek and Silverman, 2008). This type of mining is still destructive to ecosystems, but less so than mountaintop removal because it is easier to return the land to its flat state than to rebuild and reforest a mountain. Western mines are also typically more removed from communities than are eastern mines. Open pit and strip mining in general are safer than underground mining because miners do not have to fear mine collapse and the other dangers of working underground.

1999, while just three years prior, 500 workers removed only 33 million tons (Fox, 1999). Surface mining also permits the use of explosives, which allow for the quick, complete removal of massive amounts of coal. The labor saving qualities of strip mining help coal industry executives, but hurt mining communities, who benefit much less from strip mining operations than they do from underground mining. The reduction in miners needed to produce the same results continues to shrink. In 1985 there were 122,102 coal miners in Appalachia. By 2005 the number had decreased to 53,509 (Hendryx & Ahern, 2008). The underground mining industry of the east was struck another blow with the passage of sulfur regulations. Not only were coal supplies diminishing, but their coal was now considered to be too dirty to burn without mixing it with western coal. In an attempt to remain competitive with western coal, the concept of mountaintop removal was introduced in Appalachia in the 1970s. Since then, coal companies, community members, and activists have been butting heads over the process.

The Problems with Mountaintop Removal

Stopping coal emissions is 80 percent of the solution to climate change, and halting mountaintop removal is the essential, rational first step. Any politician who claims to support our children and the environment, but also supports mountaintop removal, is either a fool, a liar, or both. (Hansen, 2009)

Also called contour mining, mountaintop removal is a type of strip mining that involves the removal of the top of a mountain in order to access the coal seam underneath. The excess dirt, rocks, trees, and other vegetation is called overburden and is dumped into the valley below (Kubasek and Silverman, 2008). Valley fills are constructed out of the overburden between the mountains. These valley fills can be up to 500 feet tall and 1000 feet wide. Streams often run between the mountains and are filled with overburden, harming aquatic ecosystems and polluting ground water and headwater streams (Fox, 1999). To date, more than 1,200 miles of streams have been filled in or destroyed, a number that grows every year (Kubasek and Silverman, 2008). This number does not include the loss of ephemeral streams, which do not flow year round, but are still ecologically important. When these streams are filled in, other streams become clogged with sediments and minerals, affecting downstream flow and temperature and reducing biodiversity (Burns, 2007).

Valley fills, along with the compaction of soil that occurs from large vehicle traffic and reclamation efforts, also contribute to flooding. When it rains, the compromised stream systems

cannot handle the mountain runoff of water and rocks from the valley fills. Maria Gunnoe, West Virginia resident and activist, became involved in the fight against mountaintop removal when she and her daughter almost drowned in such a flood at her home in 2003. Similar flooding occurred on her property six times over the next three years (Goodell, 2006). Gunnoe and other residents of mountaintop removal communities are also affected by slurry pond flooding and other negative effects that result from strip and underground mining as well. Flooding and all that it leaves behind is anything but clean, further implicating the coal industry and processes associated with using this fuel.

Another negative externality that results from mountaintop removal is the extensive blasting that occurs to reach the coal seams. The blasting is bothersome to the communities unfortunate enough to be located near a mountaintop removal site because of its extreme noise, but there are more serious consequences as well. Home foundations become cracked and it is very difficult for residents to prove that the damage was caused by blasting. Walls shake and become bowed. The coal companies tell residents, most of whom live in older homes, that the damage is just age-related and not their fault. The blasting produces high levels of dust that settles on people, their homes, cars, and other belongings. This dust is irritating, both aesthetically as well as medically. A form of particulate matter, a pollutant, the dust has increased levels of cancer, asthma and other respiratory problems for residents, especially children (Motavalli, 2007). “I can’t use my lawn, I can’t sit on my porch. I’m a prisoner in my own home,” says Clinton Handshoe of McRoberts, Kentucky. He fears for his grandchildren who become covered in dust when they come to visit and then must be washed in contaminated water (Reece, 2006, p. 113).

Mountaintop removal devastates communities, destroys plant and animal life, and pollutes our water and air. It also results in what may seem like an obvious effect: the removal of entire mountaintops. The central Appalachian regions of West Virginia and Kentucky are home to some of the most diverse plant and animal species on the planet, including many invertebrate species who live in very few locations worldwide and depend on the Appalachian environment (Burns, 2007). The Appalachian deciduous forests are the second most diverse ecosystem in the world behind the tropical rainforest. When mountaintop forests are turned into grasslands, serious ecosystem alteration results, affecting much more than just the Appalachian region. Ecosystem fluctuations cause changes in migrating birds, insects, aquatic species, and mountain runoff, all of which affects surrounding regions and ultimately the increasingly interconnected world. Mountaintop removal in West Virginia alone has resulted in the elimination or disruption

of 244 plant and animal species. The people of Appalachia depend on the forest's diversity, as they harvest many herbs and medicinal plants from it (Pancake, 2006).

The coal industry and its supporters often deny or minimize the environmental impacts of mining, as Stephen Walker, president of Walker Machinery did when he said, "Do not blame the modern coal industry for water-quality problems . . . Modern coal mining does not pollute" (Burns, 2007, p. 45). Bill Raney of the West Virginia Coal Association asserted at a 1998 hearing, "Today's hearing isn't about streams. It's about jobs, and families and kids, and a way of life," (Burns, 2007, p. 45). Deliberately vague claims like these are a form of greenwashing and minimize the problems experienced by people negatively affected by coal extraction.

People negatively affected by mountaintop removal and the extraction process in general feel differently and explain that environmental health directly impacts their families' way of life. Julia "Judy" Bonds, longtime West Virginian and now internationally recognized environmental activist, comments on what happened when Massey Energy moved in to Marfork Hollow, West Virginia and began to mountaintop mine the area. "When they first moved in there, we had a thriving community . . . people there that didn't own their own land . . . they were the first people to be moved out" (Burns, 2007, p. 51). Massey eventually moved everybody out of the town, including those buried in graveyards. This was not an isolated incident, but something that happens frequently in extraction regions. Companies do not always forcibly remove residents. Sometimes they are driven out by unbearable living conditions resulting from polluted water, damaged building foundations, flooding, or intolerable blasting noise and dust. The effects are the same, though, and are never discussed in the clean coal debate.

There are many so-called practical reasons to stop the use of mountaintop removal as a mining method, but there is a certain aspect of the destruction that is more difficult to quantify and explain. The mountains have a great deal of meaning not only to the people who live near them but are valued by much of the world. There is a sense of spiritual value associated with mountains and their removal just seems wrong to many people. Mining towns are usually small, rural places with rich cultural histories. Most residents have lived there for their entire lives, and their ancestors lived there long before that. People become accustomed to their ways of life in these small towns and by destroying their environment, homes, and culture, pieces of American history are also disrupted. Mount Mitchell in the Black Mountains of Kentucky has been labeled the "highest point of land in the United States, east of the Rocky Mountains" (Silver, 2008, p. 88). The people of Kentucky are proud of this feature of their land. They show it off to visitors and feel a sense of accomplishment for living near such a magnificent site. The other people of

Appalachia feel this way about their own environment. The destruction of the Appalachian Mountains is also a destruction of Appalachian culture, neither of which can ever be entirely regained.

Legislative Action

Mountaintop removal will not cease unless one of two things happen: 1) it becomes economically infeasible to continue the process or 2) regulations are passed prohibiting it. In 1977, the Surface Mining Control and Reclamation Act (SMCRA) was passed by Congress and signed by President Carter. The Act's purpose was to require that surface mined land be returned to "a level of productivity equal or superior to its condition prior to mining" (Kubasek and Silverman, 2008, p. 344). The Act reads like the strong environmental legislation it was intended to be, but its enforcement has been anything but. The Act placed serious restrictions on where and how surface mining could be conducted as well as how the land was to be reclaimed. The Office of Surface Mining Reclamation and Enforcement (OSM) was created to establish performance standards and enforce the Act. However, the OSM was repeatedly criticized for overstepping its authority whenever it attempted to curtail mining activities and its responsibilities have been seriously downgraded over the years.

A landmark court case in 1999, *Braggs v. Robertson*, was decided in favor of homeowners against mountaintop removal, but the decision was overturned two years later by the Bush administration, which supported weakened mining regulations (Kubasek and Silverman, 2008, p. 344). Current reclamation efforts are minimal and do not result in the restoration of the land to its original state. Mining companies are not required to restore mountains to their original elevations, but they are required to leave them in an equal or more productive state than that which they originated. Whether a mountain can be improved upon from its original state is another question, but the mountains are clearly not being restored adequately.

Coal industry executives, industry front groups, and affiliated politicians claim that flattened mountains are more desirable than their previous state because they are now "flatter, more useful land," (Burns, 2007, p. 139). According to the *Charleston Gazette*, 75 percent of mountaintop removal permit holders had not done any development on their mining sites (Pancake, 2006). Mountaintop removal, even when reclamation efforts are made, has serious ecological consequences. The coal producers included in this study all claim they are sufficiently reclaiming their mine sites, but this is simply not true. Despite the documented cases of

destruction and injustice, the problem remains unresolved and removed from the dialogue on clean coal, meaning the coal industry is greenwashing when they claim that coal is clean.

The 2002 EPA and President Bush decision to change the wording in the Clean Water Act to classify mining debris, or overburden, as “fill” rather than “waste” had monumental effects. A seemingly minor adjustment, this change allowed the continuation of mountaintop removal. Had the dumping of overburden been prohibited by the Clean Water Act, the waste would need to be hauled offsite, making mountaintop removal an economically infeasible practice (Cox, 2006). In 2003, the federal EPA released an Environmental Impact Statement (EIS) on Mountaintop Removal coal mining, which found a number of negative environmental impacts resulting from the process. Among other findings, the report stated that:

Mountaintop removal mining, if it continues unabated, will cause a projected loss of more than 1.4 million acres by the end of the decade—an area the size of Delaware—with a concomitant severe impact on fish, wildlife, and bird species, not to mention a devastating effect on many neighboring communities. (Appalachian Voices, 2008)

Despite the EIS’s findings, there was no legislative action to prevent mountaintop removal from occurring under the Bush administration. In fact, regulations continued to be weakened (Kubasek and Silverman, 2008).

The administration shift in January 2009 was a welcome change for most environmental and anti-mountaintop removal activists. While President Obama’s position on clean coal during his campaign was supportive, his stance on mountaintop removal legislation was considerably stronger than that of the previous administration. When asked his thoughts on strip mining by activist group Appalachian Voices, Obama responded, “Strip-mining is an environmental disaster . . . (we) have to find more environmentally sound ways of mining coal” (Appalachian Voices, 2009). This statement was very encouraging to many environmentalists and mountaintop removal critics who believed that Obama would end the practice if he became President.

However, his decisions on mountaintop removal since taking office in January have been mixed. The administration started off with strong anti-mountaintop mining action. On March 24, 2009, Obama-appointed EPA Administrator Lisa Jackson announced they were halting all mountaintop removal permits until they could evaluate the environmental impacts of the practice. This decision followed a series of anti-mountaintop removal actions, including several protests in Washington, D.C. and Kentucky, a letter writing campaign, and a meeting between EPA officials and environmental organization leaders (It’s Getting Hot In Here, 2009). The decision was met with serious opposition from the coal industry and coal supporters, who feared negative economic

repercussions and job losses (Navarro, 2009). Environmentalists and anti-coal activists were thrilled with this decision and thought it meant the end to mountaintop removal mining. However, since then, Jackson and the EPA have approved 42 permits and denied only six, disappointing coal opponents. On June 11, 2009 the Obama administration announced that they would be making policy changes to tighten restrictions on mountaintop removal. The goal of the policy changes is to decrease the practice's worst impacts and will involve a slower approval process for new mining permits that includes a detailed environmental review, the reassertion of federal oversight over state-level regulators, and efforts to close loopholes that allow the dumping of mining waste into streams. Nancy Sutley, chair of the White House Council on Environmental Quality, stated that neither the Council nor the EPA "make the laws" and that mountaintop removal "is allowed under current federal law," so the practice will continue for the time being (Fahrenthold, 2009). This decision was met with mixed feelings on both sides of the issue. The policy changes are not very descriptive of how the goals will be achieved and the decision does not promise an end to mountaintop removal, making coal opponents skeptical and disappointed. On the other side, coal supporters like the National Mining Association fear they will need to jump through more regulatory hoops with the policy changes (Broder, 2009).

Leading climatologist James Hansen wrote an article appealing President Obama to enact legislation that will halt mountaintop removal. In it, he said

The Obama administration is being forced into a political compromise. It has sacrificed a strong position on mountaintop removal in order to ensure the support of coal-state legislators for a climate bill. The political pressures are very real. But this is an approach to coal that defeats the purpose of the administration's larger efforts to fight climate change, a sad political bargain that will never get us the change we need on mountaintop removal, coal or the climate. (Hansen, 2009)

Robert F. Kennedy, Jr., environmental lawyer for the Natural Resource Defense Council, also made an appeal to President Obama requesting that he take the steps to stop mountaintop removal.

If ever an issue deserved President Obama's promise of change, this is it . . . highly mechanized process allows giant machines to flatten in months mountains older than the Himalayas—while employing fewer workers for far less time than other types of mining . . . America adores its Adirondacks and reveres the Rockies, while the Appalachian Mountains—with their impoverished and alienated population—are dismantled by coal moguls who dominate state politics and have little to prevent them from blasting the physical landscape to smithereens . . . coal is not an economic engine in the coalfields. It is an extraction engine. (Kennedy Jr., 2009)

Kennedy's appeal focused on the inequitable treatment received by the Appalachian people and environment. By comparing the Adirondacks to the Appalachian Mountains and noting the lack of economic improvement mountaintop removal brings, he emphasizes the environmental injustice involved with the process. Kennedy and Hansen are such strong opponents of mountaintop removal because of the practice's lasting effects on the environment and the communities where its destruction occurs. They know that the benefits derived from mountaintop removal are minimal and felt by few compared to the practice's destructive results.

Clean coal supporters do everything they can to ignore the extraction issue because they know that clean coal technologies do nothing to clean up the effects of mountaintop removal. While people who live far from the extraction sites feel the majority of the benefits of mountaintop removal, many of the negative effects of the practice are localized. Mountaintop removal supporters are currently engaged in a battle with opponents, who are reaching a point of desperation as the harmful practice continues. Each day mountaintop removal continues, irreversible destruction occurs. This issue is important to the clean coal debate because the adoption of clean coal technologies will result in the continuation of all the problems associated with extracting coal from the ground.

CHAPTER 8: CONCLUSION

When using an environmental justice framework to study environmental-social relationships, it is essential to examine the power and wealth disparities in society (O'Rourke and Connolly, 2003). Central Appalachia is a peripheral region within the United States, likened to a Third World country in many regards. Peripheral regions exist in large geographical areas with comparatively small populations and little power. Core regions are typically smaller in size, with larger populations and more power. Core regions exploit peripheral regions by taking their raw materials and natural resources so they can maintain their higher status. When peripheral regions attempt to challenge the core, a battle for control results, similar to what occurs when dissatisfied Appalachian residents stand up to the coal industry (Burns, 2007). Coal extraction in Appalachia, particularly mountaintop removal, has numerous environmental justice connections. By studying the process and its effects, one can see that a select segment of society bears the brunt of the negative environmental impacts while the benefits are widely dispersed. Since the location of mountaintop removal is quite remote compared to rest of the United States, it is easy for people to overlook the negative externalities associated with coal extraction and focus only on the benefits.

Marketing coal as clean when the process will not change the rural environmental injustices perpetuated by its burning and extraction is a clear example of corporate greenwashing. The coal industry and its supporters know that most people do not understand the details behind the technologies and they do not attempt to clarify their arguments or explain the truth. Instead, they work to sustain the term's ambiguity and retain their hold on the clean coal debate. In this research, I seek to expose the reality behind the clean coal campaign and bring a voice to an issue that is routinely ignored.

Traditionally perceived as a dirty fuel, the burning of coal has been subject to federal regulations that place limits on maximum pollutant emission levels since the passage of the Clean Air Act Amendments in 1970, but the environmental impacts of the extraction process have received less attention due to a combination of social, political, and economic forces.

For one, coal mining generally occurs in remote, rural areas, which means most people are removed from the process, making the far-reaching issue of air pollution much more salient to much of the population than extraction (Torrens, 1990). The attitude that remote extraction locations do not matter to most people is not new. In 1972 then-AEP Vice President Harold R. Johnson said, "A lot of the plants are way out in the country—in the Kentucky hills, for instance. No one even lives there. Some of those plants don't have the best precipitators, and they may

never, because it's not needed" (Morgan & Jerabek, 1974). Clean coal might sound like a good idea to people who live far from the places coal is sourced, but it does nothing to help those living in extraction regions. These people are forgotten and ignored while their wellbeing, health, and environmental quality is sacrificed so the lights can stay on for the rest of the world. The people of Appalachia suffer from a serious environmental injustice so that others may benefit.

Second, coal extraction has traditionally taken place in economically depressed areas whose residents are dependent on the few remaining mining jobs and everybody knows someone who works in a coal mine, making them loathe to stand up to their employers (Reece, 2006). Poverty rates in coal mining counties are higher than those in regional and national averages, making them vulnerable to the coal industry's destructive exploitation (Hendryx & Ahern, 2009). Because the coal industry has been such a large part of Appalachia for more than a century and industry executives go to great lengths to convince community members that coal will make the region wealthy, many residents cannot conceive of any other opportunities for them. They are convinced that coal critics are out to take away their jobs when in reality the coal industry has slashed more jobs in the past half century than any environmental regulation ever would. One Kanawha County, West Virginia resident tried to convince a coal company to use mountaintop removal on a thousand acres of his property so he could then convince Wal-Mart, which employs more Appalachians than the coal industry, to build a store there (Burns, 2007). These characteristics are common to rural environmental justice issues.

Finally, powerful coal interests make large campaign contributions to politicians in order to secure the passage of favorable legislation for the mining industry (Goodell, 2006). This tactic has been used for decades. In the 1970s then-Montana senator and utility fighter Lee Metcalf said that companies raised more money to defeat his campaign than he was able to raise himself. Utilities and coal producers influence state laws, property taxes, and development plans to benefit industry needs. They also retain law firms in the counties where they operate, paying large sums of money to influence attorneys serving in the state legislature (Morgan & Jerabek, 1974). Pro-coal and MTR politicians like Robert Byrd, longtime influential politician in West Virginia, charge lawmakers who challenge the coal industry with putting thousands of jobs at risk and call MTR opponents "head-in-the cloud individuals [who] peddle dreams" (Burns, 2007, p. 91). Extraction area residents are powerless to stand up to the injustice perpetuated by industry and political actions. These factors have created a situation whereby entire mountains are being removed in Appalachia to access the coal underneath, resulting in the destruction of communities, ecosystems, and public health.

In an era where energy security is in question while our energy use consistently increases, efforts to obtain reliable sources of energy are high. The United States has a large supply of coal and our experience with coal makes it a comfortable energy choice. However, its use carries with it a wealth of problems, some of which we are currently attempting to solve. Other problems, such as the extraction process, are rarely even discussed, hence the need for this research. The coal industry profits from our reliance on coal and thus has high stakes in ensuring that coal continue to be a steady energy source, making it necessary to examine their motives in the marketing of clean coal technology. Whether or not clean coal technology is able to reduce the carbon footprint of coal-fired power plants, the ecological, social, and economic injustices that result from the extraction process must be considered in the evaluation of the effects of our coal usage. Anything less is misleading and incomplete advertising, or greenwashing.

The socially and environmentally destructive effects of mountaintop removal and other strip mining methods on Appalachian communities have been excluded from clean coal debate. The region is still being exploited while the rest of the nation remains ignorant of where their power comes from and the destruction this entails. These problems will not be solved or remediated through the use of clean coal technologies, a reality that must be addressed. We cannot determine if clean coal technology is really clean without examining the entire process of using coal, from extraction to energy production. The standard definition of “clean coal” is deliberately vague and does not include enough information.

This research presents evidence that coal industry claims touting the possibility of clean coal do not hold true when compared and contrasted with the environmental, health, and economic problems the fuel perpetuates. People who live in extraction areas are politically and economically powerless to challenge coal industry decisions that create disproportionate ecological, social, and economic hardships for them. Rural environmental justice issues like coal extraction and to an extent, burning, differ from the more studied urban issues. Rural community members have different needs, problems, and priorities than urban residents. Their situations require different solutions than those found in cities. The benefits of burning coal do not outweigh the environmental justice issues created by its use and the longer it is used the more injustices it creates through the continuation of destruction at extraction sites. For these reasons, I conclude that the promotion of clean coal technologies as environmental solutions to the problems associated with the use of coal as a main energy source is a form of greenwashing. I base my argument on the technology’s unproven effectiveness and on the many problems directly related to the burning, processing, storage, and extraction that the current definition of clean coal

cannot and will not alleviate. My analysis is focused on the extraction process because it is so conspicuously absent from the clean coal debate and is such an important force in central Appalachia. As my findings show, however, there are valid arguments that clean coal technologies do not and will not clean up other problems related to the use of coal, including dangerous slurry spills, mercury contamination, coal ash residue, and toxic drinking water.

Directions for Future Research

The issues surrounding the clean coal debate are in a period of constant change and transition. New events happen every day that change the industry's ability to proceed with mountaintop removal mining and power plant construction and modification. Community and environmental activists are also in a state of rapid action in their efforts to block power plant construction and end mountaintop removal. These factors mean that research on this topic must be ongoing. This research therefore serves only as a snapshot in an ever-changing dynamic.

Furthermore, the marketing of clean coal technology is an expansive topic. During the course of this research, I discovered there are many topics that need further investigation. Some of these include: a closer look at coal industry front groups and trade organizations' motives and actions; a more thorough analysis of each form of clean coal advertising method (print, digital, television, community outreach); a complete history of coal industry marketing methods; and a more detailed investigation of the environmental justice issues associated with mountaintop removal mining. Rural environmental justice issues in general require more research so that we may understand the reasons they occur, the patterns behind them, and appropriate solutions for these types of problems.

The coal industry's massive clean coal marketing campaign is directly related to their knowledge that the U.S. is undergoing major changes to its energy and environmental policies. Coal industry leaders know their continued success hinges on their ability to convince the nation that clean coal will solve our energy and environmental problems. In doing this, they are ignoring potentially more cost effective, less harmful energy sources like geothermal electricity, which according to some sources, is currently cheaper than coal fired power plants (Anderson, 2009). If the coal industry is successful with its promotion of clean coal technologies, huge sums of financial, natural, and human resources will be spent on a technology we already know will perpetuate environmental destruction, health problems, and economic inequities for a group of people who have little access to the resources necessary to defend themselves. A wealth of time and resources have already been wasted promoting an ineffective method of energy generation

that could have been invested in clean, renewable forms of energy that will create jobs in the United States and help end our reliance on antiquated, fossil fueled energy sources.

Greenwashing, through the ambiguity of the clean coal debate, diverts our attention from the extraction process, which is an environmental injustice that most people simply do not think about. The entire clean coal campaign relies on the elasticity of the technology's meaning. No one really knows what clean coal is. People viewing the industry's advertisements and reading their propaganda do not stop to think about how coal will become clean or what will change about the whole process; they are just happy their lives will not be disrupted for the time being. Clean coal supporters do not explain that people living downstream from power plants will continue to drink polluted water or that aquatic life will continue to vanish from mountain streams. They do not clarify that the technology is not even currently ready for widespread adoption and may never be. They do not offer this information and the public does not demand answers. People do not want to know that coal's problems still affect them even though they live 400 miles from the nearest power plant. They want to believe that coal can be clean because they cannot consider an alternative, which is exactly the point of the clean coal marketing campaign. In this sense, "clean coal" really means "business as usual." The clock will not stop ticking, the lights will stay on, and nobody will have to do anything differently. The coal industry will take care of protecting the dominant social paradigm, in which we are so deeply invested. In doing this, our reliance on "the way things are" grows stronger and we move further away from a shift towards non-fossil fuel energy. Clean coal advertisements extol the virtues of "American ingenuity" and claim that science and technology will solve all our problems. Based on this premise, we need to stand up and insist on a better solution. The coal industry owes the people an honest discussion about exactly what clean coal means, the problems it will solve, and those it will not. Once people know the whole story they can proceed accordingly. Until then, clean coal supporters are benefiting from an elaborate ruse that relies on public ignorance while the rural poor of Appalachia suffer at the hands of corporate greed.

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APPENDIX A: PRINCIPLES OF ENVIRONMENTAL JUSTICE

PREAMBLE

WE THE PEOPLE OF COLOR, gathered together at this multinational People of Color Environmental Leadership Summit, to begin to build a national and international movement of all peoples of color to fight the destruction and taking of our lands and communities, do hereby re-establish our spiritual interdependence to the sacredness of our Mother Earth; to respect and celebrate each of our cultures, languages and beliefs about the natural world and our roles in healing ourselves; to insure environmental justice; to promote economic alternatives which would contribute to the development of environmentally safe livelihoods; and, to secure our political, economic and cultural liberation that has been denied for over 500 years of colonization and oppression, resulting in the poisoning of our communities and land and the genocide of our peoples, do affirm and adopt these Principles of Environmental Justice:

1. Environmental justice affirms the sacredness of Mother Earth, ecological unity and the interdependence of all species, and the right to be free from ecological destruction.
2. Environmental justice demands that public policy be based on mutual respect and justice for all peoples, free from any form of discrimination or bias.
3. Environmental justice mandates the right to ethical, balanced and responsible uses of land and renewable resources in the interest of a sustainable planet for humans and other living things.
4. Environmental justice calls for universal protection from nuclear testing, extraction, production and disposal of toxic/hazardous wastes and poisons and nuclear testing that threaten the fundamental right to clean air, land, water, and food.
5. Environmental justice affirms the fundamental right to political, economic, cultural and environmental self-determination of all peoples.
6. Environmental justice demands the cessation of the production of all toxins, hazardous wastes, and radioactive materials, and that all past and current producers be held strictly accountable to the people for detoxification and the containment at the point of production.
7. Environmental justice demands the right to participate as equal partners at every level of decision-making including needs assessment, planning, implementation, enforcement and evaluation.
8. Environmental justice affirms the right of all workers to a safe and healthy work environment, without being forced to choose between an unsafe livelihood and unemployment. It also affirms the right of those who work at home to be free from environmental hazards.
9. Environmental justice protects the right of victims of environmental injustice to receive full compensation and reparations for damages as well as quality health care.

10. Environmental justice considers governmental acts of environmental injustice a violation of international law, the Universal Declaration On Human Rights, and the United Nations Convention on Genocide.

11. Environmental justice must recognize a special legal and natural relationship of Native Peoples to the U.S. government through treaties, agreements, compacts, and covenants affirming sovereignty and self-determination.

12. Environmental justice affirms the need for urban and rural ecological policies to clean up and rebuild our cities and rural areas in balance with nature, honoring the cultural integrity of all our communities, and providing fair access for all to the full range of resources.

13. Environmental justice calls for the strict enforcement of principles of informed consent, and a halt to the testing of experimental reproductive and medical procedures and vaccinations on people of color.

14. Environmental justice opposes the destructive operations of multi-national corporations.

15. Environmental justice opposes military occupation, repression and exploitation of lands, peoples and cultures, and other life forms.

16. Environmental justice calls for the education of present and future generations which emphasizes social and environmental issues, based on our experience and an appreciation of our diverse cultural perspectives.

17. Environmental justice requires that we, as individuals, make personal and consumer choices to consume as little of Mother Earth's resources and to produce as little waste as possible; and make the conscious decision to challenge and reprioritize our lifestyles to insure the health of the natural world for present and future generations.

Adopted today, October 27, 1991, in Washington, D.C. (Environmental Justice Resource Center, 2009).

APPENDIX B: AMERICA'S POWER ADVERTISEMENTS

Clean Coal advertisement in St. Paul, Minnesota

<http://www.flickr.com/photos/americaspower/2821820393/in/pool-860503@N25>

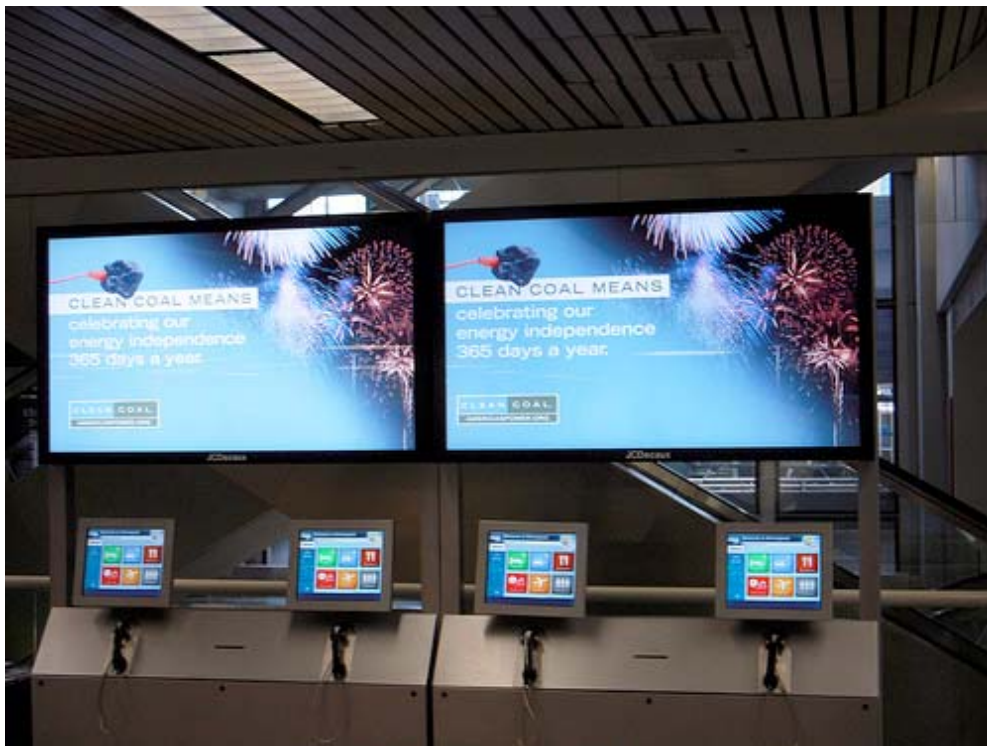


Mobile Clean Coal advertising in Greensboro, North Carolina

<http://www.flickr.com/photos/americaspower/2943766225/in/pool-860503@N25>



Then-Senator Joe Biden with ACCCE street team member
<http://www.flickr.com/photos/americaspower/2977744951/in/pool-860503@N25>



Clean Coal ads in Denver airport
<http://www.flickr.com/photos/americaspower/2820926565/in/pool-860503@N25>

APPENDIX C: CLEAN COAL BILLBOARDS



Billboard sponsored by *Families Organized to Represent the Coal Economy* (FORCE)
<http://ecoscraps.com/2008/09/>



America's Power billboard
http://www.salon.com/news/feature/2008/05/15/coal_marketing/



Billboard sponsored by Walker Machinery
<http://politicalclimate.files.wordpress.com/2008/12/clean-coal.jpg&imgrefurl>



<http://behindtheplug.americaspower.org/2008/08/mobile-billboar.html>

APPENDIX D: ANTI-COAL BILLBOARDS



Clean coal opponents' billboard in Virginia

http://www.appvoices.org/index.php?/site/voice_stories/assessing_the_cost_of%20wise_county_coal_plant



Billboard in Nevada

<http://www.nevadacleanenergy.com/coal:-a-bad-bet/>



Anti-mountaintop removal billboard in West Virginia

http://current.com/items/90595991_stop-destroying-my-mountains-god.htm

APPENDIX E: JAMES HANSEN'S LETTER TO DON BLANKENSHIP

June 22, 2009

Dear Don,

Thanks for your offer to publicly discuss climate change, human-made global warming, and its implications for the coal industry in general and mountaintop removal in particular. That is an excellent suggestion. I would be glad to participate in a format that allows the public to become better acquainted with the science and its implications.

I had planned to return to a meeting in Washington immediately after the activities at your place on Tuesday, but to accommodate a public discussion, I will stay another day. I expect that we will be able to find a school auditorium that would be well-suited for presentations and discussion. I am scouting that out now and will get back to you with specific information.

Usually I spend close to an hour on a climate science discussion for the public, but I can shorten that to about 40 minutes, so that you can have a similar time to present your views, if you would like that much time. You are welcome to speak either before or after me. After we have both spoken, we can open it up for discussion with the public.

If for any reason you are unable to find time for this discussion on Wednesday, I will give my talk anyhow. Hopefully the public will then be able to get back to you with information and questions about how your practices relate to climate, the environment, and the future that will be faced by young people and future generations.

Thanks again for your helpful suggestion. I very much agree on the importance of reaching out to the public and increasing public understanding of scientific matters.

Sincerely,

Jim Hansen

http://www.climate science watch.org/index.php/csw/details/hansen_to_debate_coal_CEO/

APPENDIX F: NEGATIVE IMPACTS OF COAL

Negative Impacts of Coal	Negative Impacts of Coal That Carbon Capture and Storage Would Solve
Extraction	
Groundwater contamination, streams buried, flooding increase, acid mine drainage	
Hundreds of thousands of forest acres burned/clear cut	
Loss of cultural heritage, cemeteries, archaeological sites, etc.	
CO2 released from coal beds, mining process	
Blasting damages local homes, wells, infrastructure	
Subsidence, Unstable lands, permanent loss of soil fertility	
Processing	
Toxic sludge leftover pollutes water, poisons communities	
Dust released includes CO2, particulate matter, heavy metals	
Multi billion gallon sludge dams that have failed, killing hundreds	
Transportation	
Heavy trucks damage local roads, states pay billions to fix	
Overloaded coal trucks have killed on undeveloped country roads	
Rail, River Barges, Slurry Pipes release coal dust, heavy metals	
Dangers to Workers	
All stages of coal involve high risk jobs, Coal Counties in WV have highest rates of disability nationally	
Exposure to heavy metals, chemicals, high risks of Black Lung, Silicosis, other deadly lung diseases	
Thousands killed mining coal world wide (4,700 in China in 2006)	
Burning Coal	
Elements released from coal include nickel, mercury, arsenic, chromium, cadmium, sulfur, nitrogen, chlorine and fluorine.	
Air pollution "scrubbers" don't make pollution go away, but isolate it in power plant community, increasing local health issues	
	www.coal.org estimates power plants may be operating with a carbon capture efficiency of only 39% to 46% by 2025 -- with expensive research
Emits CO2	
Coal Plants use 2.2 Billion gallons of water per year	
Waste disposal	
More than 100 million tons of coal waste generated each year. It is underregulated and often placed into unlined pits or used in wallboard, cement, or as "anti-skid" material on icy roads	
Cancer risk is 10,000 times higher near coal disposal sites	